THE OIL WEEKLY

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PUBLISHED BY

THE GULF PUBLISHING COMPANY
HOUSTON, TEXAS

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Staff correspondents at all important points.

Member Audit Bureau of Circulation
Member Associated Business Papers, Inc.

BRANCH OFFICES

NEW YORK.....250 Park Ave.
PITTSBURGH....Standard Life Bldg.
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LOS ANGELES.....Haas Bldg.
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SPECIALIZED OIL JOURNALS

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Oil Man's Calendar

DEC. 6–10	**American Society of Mechanical Engineers, New York.**
14	**Mid-Continent Oil and Gas Association, Annual Meeting of General Board of Directors, Tulsa, Okla.**
14	**East Texas Chapter, American Petroleum Institute, Kilgore, Texas.**
17	**Wildcat Christmas Jinks and Banquet, California Oil & Gas Association, Biltmore Bowl, Los Angeles.**
28–30	**American Chemical Society, Organic Division, Richmond, Va.**
1938 JAN. 24–25	**Northwest Petroleum Association, Minot, North Dakota.**
FEB. 14–15	**Kansas Oil Men's Association, Annual Convention and Exposition, Hotel Broadview, Wichita.**
14–18	**American Institute of Mining and Metallurgical Engineers, Annual Meeting, New York.**
17–18	**Mid-Continent District, American Petroleum Institute, Division of Production, Herring Hotel, Amarillo, Texas.**
MAR. 16–18	**Annual Meeting, American Association of Petroleum Geologists, Roosevelt Hotel, New Orleans, La.**
24–25	**Southwestern District, A.P.I. Division of Production, Spring Meeting, Blackstone Hotel, Fort Worth, Texas.**

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Published every Monday. Single Copies 15 cents (Special Issues 50c). Subscription price: domestic and foreign, $2.00 a year; 2 years $3.00. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879. Subscription restricted to those engaged in the producing and pipe line branches of the oil industry or the manufacturing and distribution of oil field supplies. Advertising rates on application.

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1938 BUDGET

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LOOKING AHEAD

WITH THE EDITOR

Curbing Plunger Packing Corrosion . . .
New Gas Well Acidization Technique . . .
What is at 15,000 Feet, Oil or Gas? . . .
New Evaluation Table . . .

YOU who have read short articles by Charles C. Lynde know that the man doesn't write unless the has a definite suggestion for saving money. In an early issue he will discuss curbing pump plunger packing corrosion. Lynde not only points out incorrect practice of which many have been guilty, but—more to the point—tells you how to do the job correctly.

OIL production is not the only thing acidization will increase. Texas Panhandle operators in recent months have developed a technique of their own for using acid to increase gas production. Because it is paying off on a bonanza scale, you should look forward to the instructive, practical article treating gas wells with acid in an early issue.

WHAT type of crude oil will be found at and below 15,000 feet? You don't know. But speculation on the question is interesting. Some say only distillate or gas. Others, pointing to a recent discovery in South Louisiana, say stable crude will be found. Brad Mills in an early issue will discuss the subject. And it is an important one to the oil man of tomorrow.

OLD Morgan Biggs, evaluation engineer, has often come into our editorial offices ranting and raving about the paucity of literary lore to help the evaluation engineer in his pursuits. To Morgan, and others of his justly complaining ilk, it is a pleasure to announce that a forthcoming issue will carry "An Evaluation Table With Limiting Elements," by Alexander B. Morris, petroleum engineer. The table forms an excellent supplement to those of V. G. Gabriel in the October 25 issue of THE OIL WEEKLY.

The changing panorama

this week

VARIOUS indications that the business tide may be changing for the better have given encouragement in the oil industry, as in other lines.

The stock market has been doing better lately. Engineering construction awards are encouraging. Several prominent business leaders and economists have re-asserted optimistic views. Farm equipment companies are enlarging capacity for manufacturing tractors, a development having particular significance for the oil industry.

Oil Industry Outlook Better

Meanwhile, within the industry itself, some favorable developments have occurred. Gasoline prices finally have halted their precipitate decline and have remained fairly steady for two weeks.

Crude oil prices were again reduced, 15 to 18 cents a barrel, in the Pennsylvania grade fields at the middle of last week. But as in the case of earlier cuts in that area this year, the reductions apparently reflected primarily the local conditions rather than general market weakness.

In fact, there is now much less talk than several weeks ago about the possibility of a general decline in crude prices.

Thus the depression psychology apparently has been at least temporarily arrested, both within and outside the oil industry, despite the dark spots that remain in the economic picture, such as decreased employment and curtailed industrial activity in various lines.

Serious Circumstances Remain

Nevertheless, confidence has been badly shaken, and much fear and uncertainty remain in both the general and the oil situations.

The unemployment situation has become serious in the steel and automobile manufacturing districts, and conditions in those areas naturally tend to similarly affect other districts and industries. Pessimism over probable reduced sales of automobiles next year is particularly ominous for the oil industry, although motor vehicles already in use assure continued large demand for petroleum products.

Continued Strict Control Needed

The uncertainties that still remain make it imperative for the oil industry and oil conservation officials to continue maintaining strict regulation of operations at wells and refineries, in the interest of orderly conditions and markets.

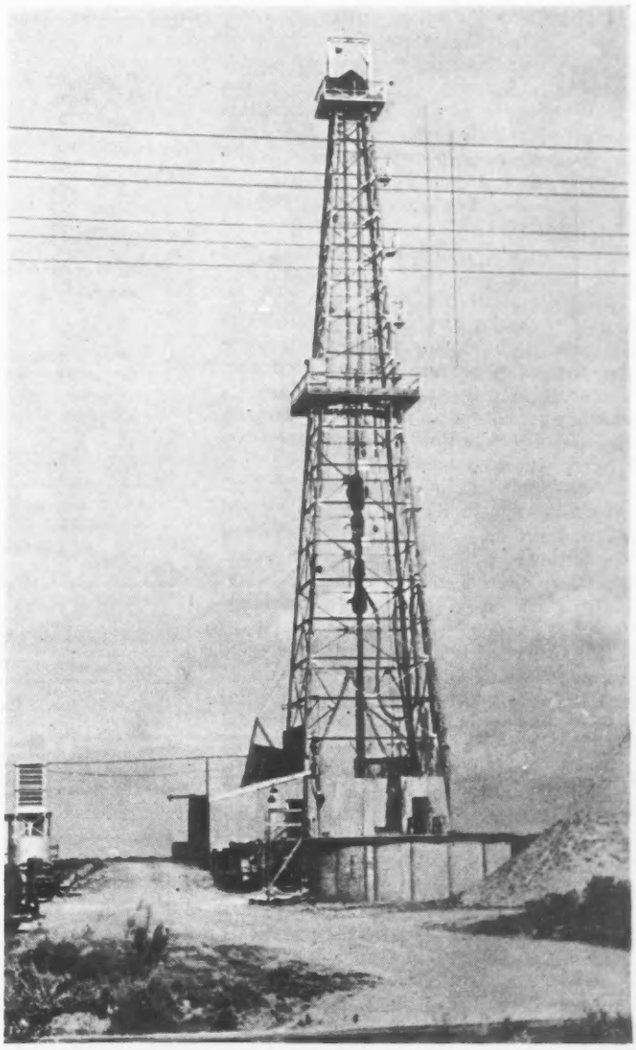
And so far, a comparatively good job has been done along this line, by all concerned.

December Allowables Strict

Certainly, no complaint can be offered regarding crude production control that is scheduled for December. The allowables adopted by the six leading producing states are not only within but well under the prospective market demand, as forecast by the Bureau of Mines. It is indicated, consequently, that some crude oil will be withdrawn from storage again in December, as in the three preceding months.

For the closing four months of the year, crude oil inventories probably will show a net decline of over 10,000,000 barrels.

Meanwhile, the stocks stand only about 5 percent



WORLD'S DEEPEST producing well is Union Oil Company's Kernco 1-34, which discovered the new Rio Bravo field in Kern County, California. It is producing 1500 barrels choked from 11,302 feet.

higher than at this time last year, an increase justified by the fact petroleum demand has been running about 10 percent higher this year than last year.

This situation regarding both production control and crude oil storage obviously is very favorable. And it should go a long way toward preventing the threatened general crude price decline that many have come to fear.

Gasoline Market Steadier

Furthermore, it appears reasonable to hope that the favorable crude oil situation may not only save present crude oil prices but also pull the gasoline market back upward, out of the soft ground into which the latter has slipped.

In fact, if the crude market can successfully hold its present position, at least a partial recovery of the gasoline market seems inevitable. For gasoline prices now are in unfavorable relation to the raw material from which the product is made. And if refiners must continue paying the established prices for crude, they ultimately must obtain correspondingly favorable prices for their finished product.

Furthermore, evidence finally has arisen that the gasoline market henceforth may perform more favorably. Following steady declines in October and most of November, gasoline tank car prices finally began resisting the downward movement about two weeks ago. And subsequently, the prices have been holding fairly well.

Studies of Oil Reserves Advocated

Reporting this week on its various activities in the field of oil, the Interior Department stressed the need for exhaustive studies of underground reserves, distribution of oil products, and other questions which bear directly upon efficient production and conservation.

At the same time, it was disclosed that while tender board activities are now confined to East Texas the department is prepared to act promptly should "runaway" conditions develop in any other field, and is keeping a surveillance over the major fields, so that it may not be caught unprepared.

Drilling

THREE major extensions appear probable for the Strawn sand production in K-M-A field, lending strength to predictions it is destined to become the largest single field in North Texas. Operators are prophesying a productive area of from 30 to 50 square miles. An east-west width of 7¼ miles already is indicated.

A wildcat in Decker Township, Illinois, initialled 200 barrels to present Richland County with a new field. Leases are such that immediate drilling is presaged.

Kansas added two new fields and reported prospects of another. Rice and McPherson counties contributed the strikes, the possible pool opener being in Barber County. Habiger and Cress pools were extended, and the offset to the recently discovered Peterman pool of Barton County was completed for 2678 barrels.

Two wells with comparatively high structural positions in Wasson field showed cut oil, emphasizing an irregular water table in the Gaines County sector. Delaware and deep Ordovician exploratory efforts in West Texas were disappointing.

Discovery of a Vicksburg sand field at 5013 feet in Goliad County opened a new trend play in South Texas. A wildcat completing in Frio formation at 6371 feet apparently affords a connecting link between Keeran and Placedo fields of Victoria County. Another wildcat, completing in Frio sand at 6123 feet may give Starr County a new field. A mile north of Oilton in Webb County Cockfield production was found. Las Animas field in Jim Hogg County was extended 1½ miles southwest by a gas well. Pettus sand production of North Sweden was extended 4700 feet east.

South Louisiana chalked up a new field at Quarantine Bay and a new sand discovery in a three-quarter mile outpost at Welsh field.

In the Texas Coast region a wildcat is looking for deeper oil after already having indicated it would open a new field. Cedar Bayou, recently heralded as a discovery, was disappointing as the discovery well died.

Market briefs

Outlook—Confidence apparently increasing.

Crude Markets—Prices holding.

Refined Oil Markets—Gasoline market steady for second consecutive week.

CURRENT OPERATIONS

Week Ended	Daily Crude Production	Daily Crude Runs to Stills
November 27	3,425,800	3,325,000
Previous week	3,573,850	3,365,000
Year ago	3,010,650	3,020,000

CRUDE STOCKS

Date	Crude Oil (Barrels)
November 20	304,324,000
Week ago	305,608,000
Year ago	288,630,000

REFINED OIL STOCKS

Date	Gasoline (Barrels)	Gas & Fuel Oil (Barrels)
November 27	68,544,000	121,616,000
Week ago	67,661,000	121,191,000
Year ago	57,448,000	112,025,000

DRILLING

Period	Wells Completed
Past week	494
Previous week	568
Year ago	516
Year Total	
This year	27,292
Last year	22,542

Technology

CONTROLLED back pressure is proving effective in retarding paraffin accumulations in Texas Panhandle wells. A number of operators have equipped pumping wells with pressure manifolds, and through no more than ordinary attention, have obtained partial control of such formation. The simple installations being used are described on page 18.

The second installment of Paul D. Torrey's series on water flooding appears on page 22. It discusses such phases as geologic factors, physical and lithologic characteristics of producing formations that affect successful flooding, and theoretical considerations involved in the work.

Northcutt Ely's discussion of legal restraints on drilling and production is completed in this issue. This installment, which is on page 30, is a continuation of court opinions cited to illustrate the author's observations. He warns that oil production now appears to be vulnerable to direct federal regulation for the first time.

On page 35 appears the first installment of a most thorough discussion of the methods and results of circumferential field welding of casing strings, a new practice that is receiving much attention.

A system of improved lubrication has resulted in the excessive wear of valve stems and guides on engines in a main line pump station being reduced, and consequently many shut downs and overhaul jobs have been eliminated. How this was done is told on page 50.

Proration Picture

Allowables below demand . . . Price jumps into proration picture . . . East Texas Sunday shutdowns opposed . . . Purchasers curtail Arkansas.

IT became assured last week, when allowables for all the leading producing states became complete, that crude production control in December would be restricted to such an extent that the output of wells should be under demand, thereby providing a materially strengthening market factor.

Meanwhile, the matter of commodity prices, heretofore a forbidden subject for open discussion in connection with proration, jumped squarely into the conservation picture. Two developments raised the question of economics. First was the suggestion from Governor E. W. Marland of Oklahoma that the governors of oil producing states hold an oil price conference, which was followed by the injection of market prices into a field hearing before the Texas Railroad Commission.

Strict December allowables

The crude production control scheduled for December, under the allowables adopted by the leading producing states, will be exceptionally strict, and undoubtedly will have a strengthening effect on the crude oil market.

In fact, it is indicated that production will be restricted not merely within market demand but well under demand.

Consequently, a considerable amount of crude oil probably will be withdrawn from storage again in December, as in November, October and September. Thus December promises to constitute the fourth consecutive month of diminishing storage. And for the four months, a net withdrawal of over 10,000,000 barrels probably will have occurred.

Storage Situation Good

This substantial draft on storage in the closing months of the year will go a long way toward canceling the addition of about 20,000,000 barrels to storage in the early months of the year.

The crude storage situation already is comparatively good, moreover; for present inventories, although about 5 percent larger than at this time last year, represent somewhat fewer days' supply, since demand, meanwhile, has shown a larger increase than the stocks. The total demand for petroleum has been running about 10 percent higher this year than last year.

Allowables Under Demand

The six leading producing states have adopted for December aggregate allowables 85,082 barrels daily or 2.6 percent under the indicated market demand, as estimated by the Bureau of Mines.

This program for December involves a similar strictness of control as that which prevailed in November and October, and is stricter than the program for September. And as stated previously, the allowables of those recent months were sufficiently low to hold production actually below market requirements and consequently to result in material withdrawals of crude from storage.

Price and proration

Governor E. W. Marland brought price out into the middle of the proration stage, and turned the spotlight on an actor previously held either in the background or behind the backdrop.

What the Oklahoma governor proposed was that the governors of the oil-producing states get together and "talk price." He took the view of why save oil unless a profit can be made from it, and that governors can talk price without violating any federal statutes, and that price, being the all-important factor in conservation, needed discussion.

Texas Rejects Conference

From Texas came a flat rejection of any price conference, as James V. Allred, the state's governor, observed he was not so sure that governors were immune when federal statutes are violated. Besides he could see no justification in chief executives of the states doing indirectly for the petroleum industry what the petroleum industry cannot do for itself.

From Kansas and Arkansas came approval. Governor Walter A. Huxman of Kansas indicated his willingness to attend. Carl E. Bailey of Arkansas thought the plan excellent, and suggested that the conference be held in Hot Springs.

As the week closed no response had come from 17 other governors, who received the suggestion and invitation from the Oklahoma governor.

Colonel E. O. Thompson, member of the Texas Railroad Commission and chairman of the Interstate Oil Compact Commission, said price would not be mentioned at the next compact meeting in January. That Colonel Thompson knows price talk has an influence on conservation was demonstrated at Chicago in November. He came there for the annual meeting of the American Petroleum Institute. There was "no getting around a table and talking price" there, but talk of price occured the same. The halls and lobby of the Stevens Hotel may still be echoing with "Do you think there will be a cut in the price?"

In that atmosphere Colonel Thompson issued a statement to the effect that national crude oil output should be reduced 175,000 barrels daily. He left for Austin immediately afterwards, and soon the Texas Railroad Commission did its share toward such a reduction. Officially, Texas curtailed its production 133,000 barrels daily effective November 16 to prevent waste—the storing of oil above ground. Still, it is when conditions cause storing oil above ground that men begin asking if the price of crude will hold.

The score to date is that three governors consider price a fit subject to consider when dealing with the conservation of oil, and that they are convinced a price conference is not illegal. At least, they are willing to attend one. One governor dismisses the role of price in conservation with a flat refusal, while the chairman of the compact has ruled price out of its deliberations. The other governors, by far the majority in number, are astride the well known fence, having made no utterances of any kind.

Marland's Call

Here is how the Oklahoma governor put price to the front of the proration stage:

"The government can't put the states in jail for talking about prices. Oil men are afraid to get together and talk price. They are afraid there might be another trial like the one at Madison.

"There is no reason why Texas, California, Oklahoma, Louisiana, Kansas and every other producing state can't talk price. I propose to do it whenever it is necessary.

"Price controls market demand. Price controls production. If it were not for the price, there wouldn't be any wheat planted. If it were not for the price, there wouldn't be any oil produced.

"Price controls production and mar-

State Allowables and Bureau of Mines Estimates of Demand for December

(Barrels Daily)

STATE	Bureau of Mines Recommendation	State Allowable Beginning of Month	Exc. of State A.	Percent Excess
California	679,400	674,600	*4,800	*0.7
Kansas	186,000	176,700	*9,300	*5.0
Louisiana	244,000	253,975	9,975	4.1
New Mexico	104,100	107,600	3,500	3.3
Oklahoma	588,800.	550,000	*38,800	*6.6
Texas	1,399,800	†1,354,143	*45,657	*3.2
Total six states	3,202,100	3,117,018	*85,082	*2.6

*State allowable below Bureau of Mines allocation.
†Allowable as of November 16; increased by December 1 through completion of new wells.

ket demand. How can you intelligently discuss production and conservation without mentioning it? I'm not chairman of the oil states' compact, but it will be a great mistake if the states don't get around a table and talk price."

The governor's wired invitation also mentioned that current production was exceeding demand, and that this entailed waste, which affects the price of oil.

Price Injected Into Hearing

Although Texas' governor, Allred, and the chairman of the Interstate Oil Compact Commission, Ernest Thompson, who happens to be a member of the Texas Railroad Commission also, had shunned the matter of price talk, the subject was introduced at a field hearing before the latter body last week.

The hearing being held for the purpose of drafting development regulations for the Magnet field took an unusual trend when economic questions heretofore omitted in similar instances were injected. Humble Oil & Refining Company requested a 20-acre spacing rule for the field, which was opposed by Texas Crusaders Oil Company, who favored 10-acre spacing. The Humble Company sought to show that the closer spacing would result in economic loss, and that this loss in turn would cause physical waste of oil and gas.

When the question of costs was brought into the hearing, Rex Baker, attorney for Humble Oil & Refining Company, asserted that this factor should be considered along with the estimate of oil in place, because wells drilled too close together cannot be operated economically, with the result that spacing would be irregular, and some areas would be over-drilled and others under-drilled. He pointed out that it was the duty of the Railroad Commission to look to the price of gasoline, and that since gasoline prices are dependent upon crude production costs, then these factors must be considered.

Humble engineers estimated the oil in place at Magnet at 1460 barrels per acre foot, with about 500 barrels recovery. It was explained that with the price of $1.15 per barrel and ⅛ royalty deducted, operators would face a loss of $20,700 per well if the field is drilled on 10-acre spacing, while a profit of $18,700 would accrue with a 20-acre drilling pattern. This was on the basis of wells costing $60,000 each, and that lifting costs would be 18 cents a barrel while flowing and 35 cents per barrel on the pump. It was stated that the field allowable should not exceed 4000 barrels daily, as pressure declines would be excessive with a higher rate of flow.

The economic questions which were discussed at the hearing resulted from testimony which the commission admitted recently at a hearing on the Old Ocean field, where wells drilled to 10,000 feet are extremely expensive. This hearing was held before Railroad Commissioner Ernest O. Thompson, and it appeared that the Humble company assumed such testimony was admissible, since it was permitted in that case.

Should this policy be approved by the commission, testimony at future hearings on field rules probably will vary materially from that which has been presented in the past, and much more data will become available on production costs.

Reduce Arkansas purchases

Crude oil purchasing companies in the Miller County, Arkansas, end of the Rodessa field took matters into their hands last week by limiting takings to 200 barrels daily from each of the 48 producing wells. This step, which was effective Monday, November 29, was taken after the effective date of the state's proration order that would curtail output of the wells in the area was postponed for the fourth time. Originally scheduled to become effective November 1, the effective date of the order was postponed until November 16, then to December 1, and then until January 1, 1938.

Meanwhile, the overproduction of some Louisiana wells just across the Arkansas line, that had for a time exceeded their allowables to prevent the draining of properties by unallocated wells in Arkansas, had ceased with purchasing companies refusing to handle in excess of the allowable.

However, it was reported last week that two wells had procured a pipe line connection that took 1508 barrels. The Federal Tender Board at Kilgore, Texas, was reported to have taken cognizance of this, and were said to be taking steps to halt the movement of the oil into Texas. It is understood the oil is being produced under an allowable order of the Louisiana Conservation Commission that is not recognized by the tender board.

East Texas Sunday shutdown views change

Texas Railroad Commissioners last week stated different views concerning the Sunday shutdowns in the East Texas field. However, it seemed certain that the shutdowns would continue as ordered, and about equally certain that the shutdown program would not be extended after December 12, as provided in the original order. Grumblings from dissatisfied operators and royalty holders in the field continued to grow in the meantime.

Commissioner C. V. Terrell flatly declared that the shutdown order would not be extended. Commissioner Ernest O. Thompson found it necessary to deny reports carried in a New York financial paper that the commission planned to extend the shutdown. The other member of the commission, Lon A. Smith, meanwhile was seeking some means to effect a plan that would permit operators to produce the oil which has been lost as a result of the shutdown orders. He considered requesting an opinion from the state's attorney general on the validity of an order that would allow such action.

Peculiarly, the commission ordered the East Texas field shutdown on four consecutive Sundays of its own free will. From comments last week it apparently wishes now that it had not done so.

Smith called attention to the fact that East Texas operators lost 485,000 barrels on each of the four Sundays, or a total of 1,940,000 barrels that was valued at $2,531,700. He thought it only fair to the producers and royalty owners that they should be permitted to make up this amount, "Since it is not for a conservation program in East Texas, but a subterfuge to cut down production, which could not be accomplished by a reduction of the 2.32 quotient."

Other Texas matters

While the Texas Railroad Commission last week was concerned over the situation created by the Sunday shutdown order in East Texas, and was hearing the price question injected into proration matters, it took several definite actions on other problems. Among these were some increases in field allowables and operating rules for the Luby field.

Allowables Increased

The commission revised allowables for three fields. Retroactive to November 16, the Saxet field in Nueces County was raised 2989 barrels to 21,088 barrels, and the Gulf-McElroy field was increased 901 barrels to 4361 barrels daily. An increase of 1557 barrels daily in the allowable for the Manvel field, Brazoria County, was provided in an order retroactive to November 1. This order fixed the field's allowable at 9500 barrels daily.

Luby Field Rules

Operating rules for the Luby field, Nueces County, issued last week, provide for 20-acre spacing and straight acreage proration. Each well is to receive an allowable based on a 20-acre unit, but the final well on any lease may receive as much as a 29-acre allowance.

The order provides for 1200 feet of surface casing cemented to the surface, and an oil string cemented 800 feet above the shoe.

The maximum gas/oil ratio is to be 2000 to 1. The order provides that flowing well potentials should be taken through a ⅛-inch positive choke over a 24-hour period.

Condensate Hearings Postponed

A hearing to take evidence upon which to base railroad commission policies governing the production of condensate from Texas wells which was scheduled for December 6 has been indefinitely postponed.

The wells affected are those which produce fluid along with sweet gas, and which produce with gas/oil ratios in excess of 100,000 to 1.

The Texas law provides that wells producing oil with ratios that high are, ipso facto, gas wells and that if the gas is not disposed of for useful purposes as defined by statute, the well must be closed in. This law has been sustained by Federal Courts in the Clymore case.

The railroad commission, however, recognizes the fact that a shutdown destroys the value of such properties. It has authorized experimental operations in several fields in the hope that some method could be devised to permit continued production from these wells in a manner that would meet the provisions of the statute.

Notable among these experiments is

[*Continued on page 61*]

Oil in the Courts

First defense witnesses called in Madison trust trial . . . Texas court overrules rehearing plea in Allred trust suit against 15 companies et al.

WHILE the oil industry was commencing presentation of its defense against one charge of violating anti-trust laws, it appeared likely that it would be confronted with another suit of a similar nature very shortly. At Madison, defense counsel started calling its witnesses to the stand last week, when the presiding judge reserved his ruling on motions seeking directed verdicts of acquittal for indicted individuals. Meanwhile, the Texas Supreme Court overruled a motion for rehearing in that state's famous anti-trust suit of 1932, which meant the case would soon come to trial if companies did not appeal the decision to the United States Supreme Court.

Defense starts at Madison

Last week, Federal Judge Patrick T. Stone reserved ruling on motions seeking directed verdicts in favor of many of the 41 individual defendants in the government's "oil conspiracy" case being tried at Madison, Wisconsin. He did not indicate when he would rule on the motions. With this development, defense counsel began presentation of testimony to show that purchases of gasoline by the 16 major companies remaining on trial were not directed toward control of spot market prices or an attempt to "squeeze out" independent jobbers.

Details of a conference between defense and government attorneys with Attorney General Homer S. Cummings and Robert H. Jackson, anti-trust division chief, which was reported to have taken place in Washington over the Thanksgiving holiday, were not divulged in Madison. Comment was also denied by Department of Justice officials in Washington on a report in a New York financial newspaper which said "It is understood that a possible settlement was discussed."

It was apparent as the trial progressed at Madison last week, however, that little in the line of an agreement or "settlement" was reached. Clashes between opposing counsel last week were more frequent than during any of the previous seven weeks of the trial, and gave those hoping for completion of the case before Christmas grave concern.

Want Ickes Indicted

A charge that Harold L. Ickes, secretary of the interior and administrator of the NRA petroleum code, should have been indicted and placed on trial for the alleged anti-trust law violations and frequent heated clashes between opposing counsel marked reopening of the trial last week after a five-day Thanksgiving holiday.

J. C. Denton, attorney for Mid-Continent Petroleum Corporation, declared that the program of distress gasoline purchases upon which the charges are based were adopted by Ickes as "his own" and "if these gentlemen (referring to prosecution attorneys) were fair, they would indict him along with these defendants." He added that if the attorney general or his assistants had given any advice against spot market purchases it would have been heeded by the companies. On the objection of William P. Crawford, of government counsel, the court ordered Denton's reference to Ickes stricken.

Almost two days were consumed in arguments over admissibility of defense testimony. Specifically, it centered around the defense effort to bring in testimony that Ickes had intervened in the fall of 1934 to prevent a crude price reduction threatened by independent refiners, who maintained the price they received for gasoline was not sufficient to pay operation costs that had been increased by higher wages and shorter hours prescribed by the code. Defense attorneys sought to show that the code administrator promised independent refiners help in solving their problems in return for their agreement to withhold the crude oil cut. While denying introduction of testimony on this point, Judge Stone ruled that defense attorneys could introduce any evidence bearing upon the reasons for increased gasoline prices, which the government charges were caused by the major companies' "buying programs," and that he would rule on each line of testimony as the trial progressed.

Prosecution attorneys continued their protestations that the petroleum code was foreign to the indictment and continued their oft-repeated objections to introduction of testimony on "motives" of defendant companies in helping to bring about an increase in tank car prices as having no relation to the "price fixing" charges.

Proof Promised

When Judge Stone asked proof showing the defendants had authority to engage in a buying program after November 14, 1934, the date government attorneys declare the last pool authorized under the petroleum code was terminated, William J. Donovan, chief of defense counsel, replied that the defense will prove there was no "pool" during the period covered by the indictment.

Franklin First Witness

Wirt Franklin, independent producer of Ardmore, Oklahoma, was called as the first witness when the defense attorneys started presentation of their case last Monday. His identification as a former member of the petroleum code authority and first chairman of its planning and coordination committee brought the first clash between opposing counsel, but resulted in a victory for defense counsel. Judge Stone also permitted Franklin to state the duties of the committee which were to "plan and make recommendations to the petroleum administration to coordinate activities of the industry."

The witness, at the request of defense counsel, described the economics and the production and conservation of oil for the benefit of jurors. When, however, his discussion continued into the condition of the industry at the time of and immediately prior to the period covered by the indictment, government attorneys entered repeated objections, charging that the defense was attempting to "draw a red herring across the issue." Defense counsel maintained the condition of the industry from 1933 on had a vital bearing upon purposes of the companies. Franklin testified that his own refinery was forced to close in March, 1935, because it could not recover sufficient value from its products to pay for its crude oil. He said the condition faced by his plant was typical of all refineries.

The witness said that five of the 41 individual defendants remaining on trial as the week began were members of the P & C Committee, naming Charles Arnott, New York, then president and now vice president of Socony-Vacuum Oil Company; Henry M. Dawes, Chicago, president of Pure Oil Company; Edward G. Seubert, Chicago, president of Standard Oil Company of Indiana; E. B. Reeser, Tulsa, president of Barnsdall Refining Corporation, and I. A. O'Shaughnessy, Minneapolis, president of the three Globe Oil & Refining companies.

When Judge Stone ruled that the defense might show conditions and factors prevailing in the oil industry in Oklahoma and Texas during 1935 and 1936, years covered by the indictment, that did not exist prior to that time as having a bearing on the stabilized level of gasoline prices from June, 1935, to the end of that year, Franklin testified that passage of the Connally Hot Oil Act in the spring of that year and the establishment of tender boards brought an approach toward a balance between supply and demand. He said that there was no effective control of production during the first three months of 1935.

The government maintains that gasoline prices remained level during the latter half of 1935 because of "buying programs" operated by the defendant companies in an alleged attempt to control the East Texas and Mid-Continent spot tank markets.

Other factors which Franklin said contributed to the stabilized condition of the industry during that period were more stringent regulations by the Texas Railroad Commission, increased consumption beginning early in 1935, prevention of withdrawals of crude from storage, limitation of imports, advances in scientific knowledge of methods of controlling flush production, the Interstate Compact of February, 1935, and better business conditions generally.

J. E. Shatford, independent refiner of El Dorado, Arkansas, and former national coordinator in charge of administrating the refinery section, described problems of independent refiners in disposing of their products as major companies increased their manufacturing operations and construction of extensive pipeline systems encouraged movement of Mid-Continent and Texas

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World Developments

Mexico and Shell interests reach agreement on Poza Rica . . . Expect intensive development of rich oil deposit . . . Deal held of international importance.

INTENSIVE development of reputedly vast, hitherto undrilled government oil reserves in the rich Poza Rica area of East Central Veracruz is foreshadowed in the 5-year participation agreement recently concluded between the Mexican government and the Mexican Eagle Petroleum Company, British Royal Dutch Shell affiliate that already controls 60 percent of Mexico's oil production.

Heralds New Policy

Competent observers cite this turn of affairs, a topic of constant discussion in business circles since the first inklings of the negotiations, as internationally significant in two phases. It marks the adoption, at least temporarily, of a new policy by the Mexican government for realizing on its petroleum resources. And it will give Great Britain its chief cisAtlantic source of petroleum in Mexican fields, from which transportation by a non-Mediterranean route is possible.

The agreement with the Mexican Eagle is the culmination of negotiations that are understood to have been carried on for two years. By its terms, the way is opened for unimpeded development of what experts describe as an oil region second in richness only to the Iraq field.

Four Billion Barrel Reserve

Comprising the area to be drilled is the Poza Rica section, now virtually owned by the Mexican Eagle, and the adjoining or nearby sections of Poza del Cuerto, Troncones y Potrerillo, and Fundo Legal de Coazintla. The whole area in question is about 20,000 acres in extent, has been geophysically tested and is estimated to have a potential production of four billion barrels of oil. Development is to be carried on by both the Mexican Eagle and the government petroleum administration, the latter being known as Petronac.

The huge drilling program calls for 193 wells, of which the Mexican Eagle is to drill all but 46, the latter to be drilled by Petronac. All locations are to be 750 meters apart.

Leases Held Valid

Under terms of the agreement, the government recognized as valid on a permanent basis the Mexican Eagle's title to all leases and concessions held in the area. This confirmatory acknowledgment will make possible the drilling of leases the Mexican Eagle had acquired by transfer but over which title litigation had been pending with the government.

The Mexican Eagle will drill 101 wells in the production of which the government will participate for five years. The government's share will be 15 percent of the yield of 35 wells and 35 percent of the yield of 66 wells.

The Mexican Eagle (El Aguila) will drill 46 wells for its own account only and Petronac, the government petroleum administration, has reserved 46 locations which it will drill.

Beginning September, 1938, the Mexican Eagle guarantees the government a minimum of 12,500 barrels of oil daily under the compact. If this amount is not available from wells drilled in the new area of exploitation, what is lacking is to be made up from other production of the company.

The Mexican Eagle is to keep three rigs drilling permanently in the Poza Rica section and is to start drilling a well after the first of the new year in Poza del Cuero and another within five months in Troncones y Potrerillo. In case of failure of the company to drill wells located, and suspension of drilling, subsoil rights will revert to the national petroleum reserves.

To Advance $10,000,000

The negotiations with the British group headed by Cory Brothers contemplate outright advance to the Mexican government of $10,000,000, this sum to be turned over to the Mexican treasury, according to sources of unquestioned reliability. The original cash advance was cited as $5,000,000 but recent discussion has centered about the larger amount.

The additional amount of nearly $3,500,000 is to be advanced, in equal proportions, for three projects: drilling of wells, construction of three refineries, one 8000-barrel and two 6000-barrel plants; and for construction of 10 coastwise merchant

[*Continued on page 67*]

Labor Situation

Refinery strikes continue . . . Pennsylvania hour law extended . . . Union condemns Sunday shutdown . . . Propose Congressional quiz of Pine troubles.

LAST week's labor developments of interest to the petroleum industry consisted of the following: continuation of the two recent refinery strikes; a union protest of the East Texas Sunday shutdown order as being damaging to workers; an extension of the effective date of Pennsylvania's new 44-hour per week law; a challenge of Pennsylvania's new workmen's compensation act; and rival union's intervention in a hearing before the National Labor Relations Board.

Another development of interest was a threatened congressional investigation of alleged unfair competition of W. B. Pine, whose lease workers at Seminole, Oklahoma, have been on strike since September 14.

Refineries Still on Strike

The two recent refinery strikes, affecting Shell Petroleum Corporation's refinery at Houston and Shoreline Oil Company's plant near Shreveport, Louisiana, had not been settled last week, and it was indicated that an agreement may not be reached in the immediate future.

The Shell plant at Houston was still being picketed, the union awaiting the outcome of hearings now in progress at the company's East Chicago refinery before seeking any negotiations in Houston.

Shoreline Oil Company's refinery at Lewis, Caddo Parish, Louisiana, remained shut down for its third week, and indications were that it would not reopen soon. The company's connections in Rodessa and Pine Island have been taken by other companies, and the office force in the Shreveport office is being reduced.

Warrants were issued by the Caddo Parish district attorney's office last week for two men accused of terrorizing a former Shoreline worker who declined to join the C.I.O. However, the union declared the men were not emissaries of that organization when they assertedly threatened the former worker and his wife.

Union Protests Shutdown

The recent Sunday shutdown order for the East Texas field, issued by the Texas Railroad Commission, November 15, was protested vigorously by union leaders in that district on the grounds that the order was harmful to organized labor.

At a district council meeting in Kilgore, Texas, last week, union leaders adopted a resolution condemning the commission's order and claiming that

this move was designed to further entrench powerful oil companies in their control of natural resources. Ben Kiergan, of Longview, Texas, council chairman declared that this order was an attempt to restrict oil production in violation of legislative statute, preventing the restriction of the flow of any well in the East Texas field below a marginal allowable of 20 barrels per day. In the resolution the commission was asked to request the Bureau of Mines to supervise occasionally the testing of reservoir pressures in the East Texas field, rather than to allow oil companies to make such calibration tests.

Wants Congressional Investigation

Congresional investigation of the operations of W. B. Pine Oil Company, alleged to offer unfair competition to other oil companies by evasion of the National Labor Relations Act, is sought by Representative Lyle H. Boren of Oklahoma, in a resolution introduced in the House December 2.

The company operates under lease on the Indian lands in Oklahoma. The resolution charged that it has refused to comply with the labor relations act and has not developed its leases in accordance with contracts made by the Indians, with the approval of the Interior Department, and they are accordingly being deprived of their one-eighth royalty.

Boren emphasized that he has no desire to impair the validity of the company's leases, but that other companies which are operating under leases from the Indians and which comply with the law would be subject to unfair competition by reason of the Pine company's operations.

The resolution calls for the appointment of a select committee of five members of the House to make a thorough investigation of the company's operations and to report its findings as soon as practicable.

Extend Pennsylvania Hour Law

An extension until January 3 in the effective date of Pennsylvania's new 44-hour week law, which was to have become operative December 1, was granted just before the zero hour last week by the state industrial board. During the coming four weeks, the board will act on applications for exemption from provisions of the law filed by more than a score of industries, including one filed on behalf of operators of Pennsylvania's 95,000 stripper oil wells.

The law gives powers of industrial dictatorship over all state employers to a subordinate official—Ralph M. Bashore, secretary of labor and industry who presides as chairman of the board.

Whether the production division of the oil industry will be granted the exemption it seeks, described at a hearing held a week ago as imperative if leases now working are to be continued in operation, remained in doubt last week. However, fearing the law may be subject of a constitutional test, Bashore has indicated that "modifications" of its strict provisions will be granted some industries.

Industrial leaders are not alone in fearing the possible effects of the law, labor leaders in some branches of organized labor also expressing doubts

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Taxation Trend

Mid-Continent Association hears experts discuss industry's tax problems . . . Congress authority to eliminate depletion allowance is questioned.

TWO significant oil taxation discussions took place the past week. At Dallas, where the standing tax committees of the Mid-Continent Oil & Gas Association were in session, the majority of speakers urged immediate repeal of the undistributed profits tax, retention of the existing depletion allowance, restoration of the capital gains tax, and discussed means of procuring just and fair tax burdens. In Washington, D.C., Russell Brown, counsel for the Independent Petroleum Association of America, challenged the authority of Congress to eliminate the depletion allowances now granted the oil industry.

Questions authority

Authority of Congress to eliminate the depletion allowances now granted the oil and mining industries, as recommended by Secretary of the Treasury Morgenthau, this week was challenged by Russell B. Brown, general counsel for the Independent Petroleum Association of America.

Brown's denial of the right of Congress to lay what he termed taxes on capital was voiced in an interview in which reviewing the situation, he pointed out that the revenue of the treasury would, in the long run, be reduced rather than increased by elimination of depletion allowances while the oil, and possibly other, industries would be thrown into a state of disorganization.

"Even now," he declared, "confidence is being destroyed in the petroleum industry by the repeated agitation on the part of the treasury department proposing the elimination of the depletion allowance.

"This is inevitably bound to affect any planning by the industry for future investments in exploratory or wildcat work. Destruction of confidence may be as damaging as destruction of physical assets. There are times when it may be even more so."

This failing confidence, he pointed out, is based on the letter of Secretary Morgenthau to President Roosevelt last June, in which he said: "I recommended in 1933 that this provision be eliminated but nothing was done at that time; and it has since remained unchanged."

"This statement," Brown asserted, "ignores the fact that the depletion allowance does not depend solely upon an act of Congress. It is a constitutional right and not merely a statutory one. By the terms of the sixteenth amendment, Congress is authorized to lay taxes upon income. It is not authorized to lay confiscatory taxes upon capital. Since a certain amount of the receipts from petroleum production are capital return, that portion of those receipts must be deducted before an income tax can be levied. Before Congress provided the method by which depletion deduction should be made, the treasury department had recognized that such deductions were proper and by regulations provided for them."

Tax men hear Alvord, Markham and Francis

Immediate repeal of the undistributed profits tax and restoration of the capital gains tax of 12½ percent and retention of the existing depletion allowance of 27½ percent for natural resource industries were recommended before the joint conference of Standing Tax Committees of the Mid-Continent Oil & Gas Association by Ellsworth C. Alvord, counsel, American Mining Congress, Washington.

Other speakers, Baird H. Markham, director, American Petroleum Industries Committee, New York, and W. H. Francis, vice president, Mid-Continent Oil & Gas Association, Dallas, previously urged the tax experts of the petroleum industry to maintain an aggressive attitude in the effort to bring all taxes into better balance for industry.

Alvord's Plea

The plea for immediate repeal of the tax on undistributed profits was:

That would halt our business recession by encouraging industry to proceed with whatever expenditures it should make.

"Also, it is admitted that this tax will be repealed at the next session of Congress. If it will be no good for 1938, why retain it for 1937."

Concerning the depletion allowance now enjoyed by the oil industry, Alvord said:

"Depletion is accepted as a necessary and proper allowance, so it gets around to the question of computing it." Then he enumerated the several methods which have been used for granting depletion.

"The percentage method," he said, "was adopted in 1936. It has these advantages to the treasury: It assures reasonably steady income. It saves substantial amounts in administration costs as well as costs of litigation, which was frequent under former methods.

"To the tax payer it saves the cost of determining what the allowance should be. It protects the individual and small corporation, whose resources are too limited to permit employing experts to determine allowance under the other methods. It places small units within an industry on an equal basis with the larger corporations. It assures the individual and small concern that

[*Continued on page 62*]

Drilling Likely to Continue Heavy

Despite present uncertainties in business, it is indicated that drilling activity will be about the same next year as this year. Continued fair prices for crude would assure active field work.

By L. J. LOGAN, Associate Editor

ALTHOUGH present unsettled business conditions make it difficult to see clearly very far ahead into the future of the oil industry, current circumstances indicate that drilling activity in 1938 will be around the same high level as in 1937, which has proved to be the most active year of drilling on record with exception of 1920.

Actual monthly figures for the first nine months and estimates for the final three months indicate that the Bureau of Mines will show a total of approximately 33,000 wells completed in 1937, or about 30 percent more than the 25,470 new wells reported for 1936. The only year when drilling was greater than this year was 1920, when the bureau reported 33,911 completions.

Prices Control Drilling

Foremost among the various circumstances that point to a continuation of active field work next year is the prospect that crude oil prices will remain comparatively good.

For records running through the years indicate very convincingly that drilling is directly encouraged or discouraged by high or low crude oil prices. And so far, there has not arisen any strong indication that crude prices of 1938 will be greatly different from those of 1937, despite current anxiety over the safety of present postings.

The two charts presented herewith show how greatly drilling activity has depended on prevailing crude oil prices for the past 30 years. Years of low crude prices have also been years of small drilling, and years of good prices have been years of heavy drilling.

For instance, a relatively low average price of crude oil in the United States of 61 cents a barrel in 1911 depressed completions to 13,768 wells. A comparatively good average price of 95 cents a barrel in 1913 pushed completions to 25,590 wells. In 1915 the price dropped back to 64 cents and completions to 14,157 wells.

Then came the advent of the automobile age and a protracted rise in crude oil prices, and drilling also increased steadily. A scarcity of oil in 1920 plus inflated market values generally boosted crude prices to $3.07 a barrel, the highest peak since 1872; and drilling simultaneously reached a new peak, as 33,911 wells were completed.

In 1921 a reaction in business was accompanied by a sharp drop of the average crude price to $1.73 a barrel and a similar decline of completions to 21,937 wells. Thereafter through 1930 the average crude price remained largely between $1.25 and $1.50 a barrel, and the industry drilled between 20,000 and 25,000 wells a year.

Trends Down in 1931

In 1931 the disorder in East Texas depressed the average crude price for the country to 65 cents a barrel, and only 12,432 wells were completed. The price recovered somewhat in 1932, and so did drilling. But in 1933 the price dropped back around the low level of 1931, and drilling did likewise. From 1934 through 1937, prices gradually increased, and drilling also has steadily expanded.

The trend of drilling has been so nearly like that of prices, in fact, that it seems volumes of field work depend almost wholly on the relative attractiveness of crude prices.

Consequently, continued heavy drilling in 1938 seems a distinct probability, since the outlook for crude prices remains fairly promising.

Although probably of only secondary importance, in view of the above facts regarding the close connection between prices and drilling, there are various other circumstances that point to continued active drilling in 1938, including the following:

Encouraging Factors

1. Demand for petroleum in 1938 almost certainly will equal or exceed the all-time record in prospect for 1937, and comparatively heavy drilling will be required for keeping production abreast of the large market requirements. Despite forecasts that general business activity may be around 10 percent lower in 1938 than in 1937, it is considered likely that gasoline demand will be about 5 percent larger; while a further increase in fuel oil demand also is likely. Thus it appears conservative to assume that total petroleum demand will be at least as large in 1938 as in 1937.

2. The present situation regarding underground crude reserves is conducive to continued active drilling, the reserves being moderate, while discoveries in recent years have hardly compensated for concurrent drains on the older fields. Thus there will be a continued fundamental incentive for drilling for the industry as a whole.

3. Special requirements of individual companies for replenishing or increasing their crude reserves undoubtedly will make at least those companies aggressive in drilling. While present reserves are generally considered adequate in relation to current and prospective demand, the distribution of the reserves among individual companies naturally is less favorable for some concerns than for others. And in 1938, as in other years, companies in need of producing properties may be expected to drill actively or to encourage drilling through purchase of proved leases.

Just as the above secondary factors indicate a continuation of active drilling, certain other minor circumstances have contrary implications. But even among these secondary cir-

cumstances, those outlined above as tending to bolster drilling appear to outweigh those which will act as a drag upon field work.

Adverse Circumstances

This second group of circumstances of a nature repellent to drilling includes the following:

1. Confidence in the crude oil market has been considerably shaken lately, and the uncertainty regarding crude prices next year naturally will make oil company managements conservative in determining their budgets for drilling in 1938. However, lower crude prices so far are only a possibility, not a reality, and confidence may be expected to hold up fairly well as long as the actual postings do.

2. Aside from hesitating because of the price outlook, the oil company managements also feel at present that prevailing uncertainties make it incumbent upon them to conserve cash as much as possible and to be conservative in making capital outlays, including expenditures for drilling, refinery construction, and so forth. Some oil companies are not in strong cash positions even now, and whereas they normally might obtain more money for drilling wells or building plants, they now hesitate to attempt new financing.

3. The present uncertainties and the relatively weak markets for securities possibly will make it more difficult henceforth for companies or operators to finance new drilling even when they are disposed to attempt such financing.

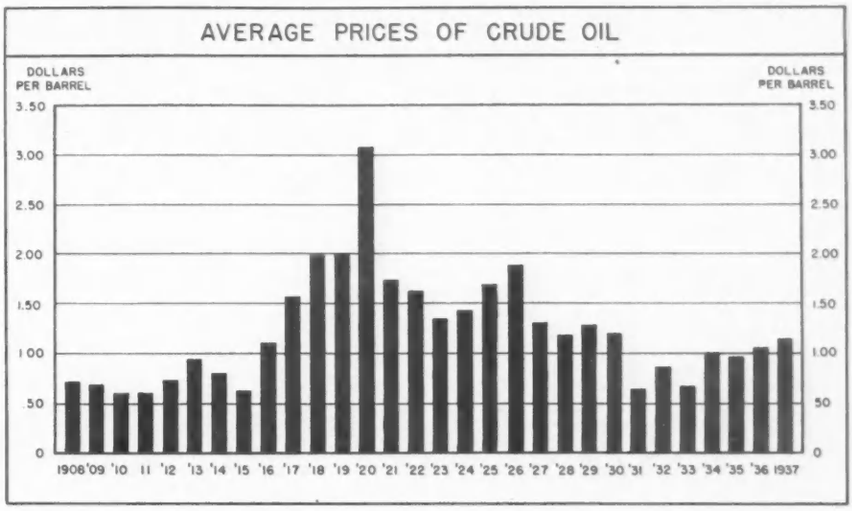
4. In common with many business men in other lines, some oil producers, small as well as large, declare that prevailing governmental and taxing policies discourage business initiative; and it is possible that this situation may tend to retard drilling.

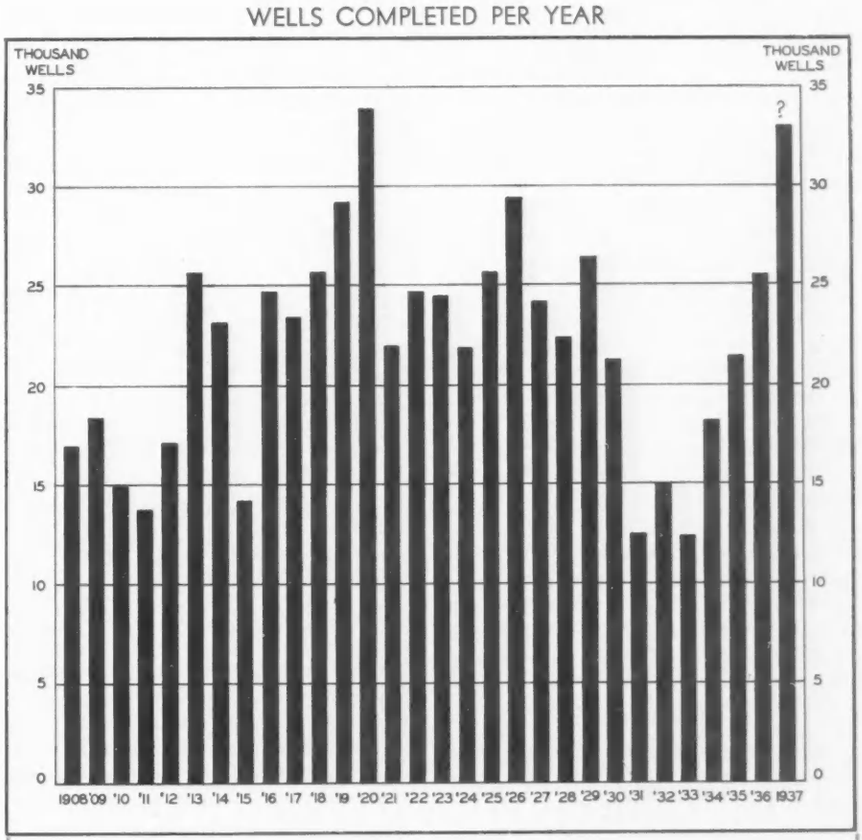
These factors that constitute potential brakes on drilling are sufficiently important to cause some doubt whether as many wells will be drilled in 1938 as in 1937. In fact, preliminary surveys by several major companies have indicated that probably less will be spent for drilling next year than this year.

But officials of some other major companies are not disposed to agree readily with this opinion that a decline in drilling is in store. They point out that numerous uncertainties are involved, and that the eventual trend of events may be comparatively favorable, in which case any present forecasts of reduced drilling might not be fulfilled.

The oil companies, meanwhile, are working on their budgets for next year. And before the end of this year general policies will have been tentatively adopted.

But even within the few remaining weeks of the year, there is time for substantial alteration of the general business situation and of individual company plans. And significantly, the most recent change has been an apparent upward turn of events, following steady declines for nearly three months. This change has been manifested in the oil industry, for instance, by the fact gasoline prices finally have halted their precipitate decline and have remained steady for two weeks; while fears of a possible general crude price decline have been at least temporarily allayed.





The two charts above indicate that drilling activity depends largely on crude oil prices. In the past 30 years, drilling has fluctuated up or down in close conformity with changes in the crude prices. The charts are based on Bureau of Mines data, although 1937 is partly estimated for each chart.

Applied Back Pressure

AS AN AGENT IN

Control of Paraffin

By FRANK B. TAYLOR, Staff Writer

CONTROLLED back pressure is effective in retarding the formation of paraffin in Texas Panhandle wells. A number of operators have equipped pumping wells with pressure manifolds, and through no more than ordinary attention, apparently have been able to obtain at least a partial control over the inter-tubing formation of produced paraffin. The installation is simple, entails almost no maintenance, and is quite low in initial cost. An increasing number of the installations are being made. One firm having 21 producing wells in the Pampa sector has 19 pressure controls installed, each of which has proven satisfactory. A careful digest of results supports the use of the equipment.

Limitations

Proponents of the principle are quick to admit limitations for the application; in fact, they do not claim the set-up to be a remedy for all conditions resulting from paraffin. It positively is not a cure-all. But at the same time, continuous operation of a pumping well for 10 months without a paraffin job when using back pressure equipment, as compared with a 60-day cleanout requirement of the same well prior to use of back pressure equipment, certainly constitutes a strong case in favor of pressure control. And this mentioned instance is by no means either exceptional or outstanding.

On some leases installations of the back pressure manifolds have been made and subsequently removed. Apparently, the effects of the equipment did not give desired results. Another factor mentioned as being important in reaching any conclusions is the variation in the nature of production in offsetting wells, or even in the same well at different periods. Engineers have indicated that while endeavoring to stop paraffin difficulties on one location, an offsetting location showing the same trouble would be allowed to produce if and however it would. At the time the first well was pronounced cured, investigation showed that the trouble in the offset had of its own accord dwindled to such a stage that it no longer presented a problem.

A Year For Test

Such results are not correlative. Apparently they are the haphazard outcome of undetectable changes in the characteristics of the producing process. The influence might be due to a change in crude structure, gas volumes, pressure ratios; either singly or combined. This complicates the true evaluation of the benefits of the back pressure method, making it necessary to judge the effectiveness of control on the basis of a number of wells for a period of not less than a year. Such a summation distinctly favors control of pressures, in a relationship equivalent to actual saving through a reduction in the number of clean out jobs, attributable to paraffin formation.

Manifold Design

The manifold by which the back pressure is controlled is a simple, gate-operated by-pass cut directly into the production lead line. Usually the installation is made near the well itself, rather than at some distance. Most of the few parts necessary for the manifold are in stock on every lease, and those parts not generally carried are of standard manufacture, easily obtainable.

To construct: (two-inch lead line)

1—2-inch ell.
2—2-inch tees.
1—2-inch relief valve.
1—2-inch straight valve.
1—2-inch union.
6—2-inch X close nipples.

The parts are made up with a short riser coming out of a tee put into the lead line, the riser ending in the upstream end of the relief valve. The other side of the relief valve, through a union and short nipple, to a down turned ell, enters to top of a tee. The continuation of the lead line through the first tee is through a two-inch valve into the near side of the tee taking the downstream side of the relief valve outlet.

In addition to the parts necessary for the fabrication of the manifold, there should be some means of regularly checking the pressure on the high side of the relief valve. One simple method to allow this check is to replace with a tee the lower ell on the lead line before it enters the back pressure manifold. From the new outlet, a short nipple, an ell, and another short vertical nipple terminating in a valve and pressure gauge connection, is made up. The usual bull plug at the end of the direct line from the tubing connection could be replaced with a swedged nipple,

valve, and upturned connection for taking pressure at this point.

Gauge Should Be Vertical

In any case, the position of the gauge used in determining the set of the relief valve should always be vertical as pressure is being taken. A horizontal or flat position allows the flex and play of the pressure element to indicate a pressure that may be false by as much as seven pounds, the exact error varying with wear of the tangent gears or their clearance. As the pressure checks need not be as accurate as those for measurement purposes, infrequent check of the gauge accuracy is sufficient.

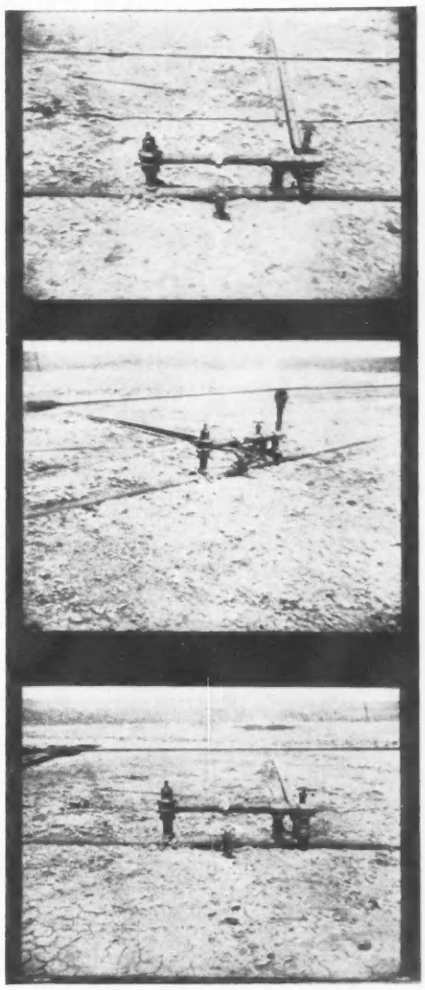
A number of relief valves have been tried in the manifolds, with the result that engineers consider the non-chattering style the more desirable. The type having seat ground for gas are usually specified, with a pressure set of approximately 150 pounds, but with an adjustable range to a minimum of 50 pounds. In practice, the valves may be set from 75 to 135 pounds per square inch working pressure, some wells apparently operating to best advantage under either these two extremes. Smooth operation of the unit is desirable. The diaphragm type of back pressure regulator can be used.

The manifold described makes use of two-inch equipment throughout. This is entirely optional. Three-inch parts are desirable on three-inch lead lines, if for no other reason than to retain the uniformity of the hookup. If desirable, two-inch fittings can be used with three-inch connections through swedging into the manifold tees.

Cost of the parts required for one complete pressure control manifold should not exceed $31.00 for two-inch. Three-inch material figures at about $50.00 complete. Both cost estimates are for new equipment, including six TBE nipples. Neither estimate includes a pressure taking connection which may already be a part of the lead line.

Routine Operation

The 125-pound setting for the relief valve has been suggested. This is open for question as the production factors influencing the deposition of paraffin are not constant, nor can they be gauged with any degree of accuracy. In addition, the fact that a lead line flowing production under ordinary conditions may already be operating at a pressure of 25-35 pounds actually decreases the applied back pressure by the difference. In this respect, if a back pressure manifold is operating at 125 pounds back pressure, the actual application above normal is only 100 pounds, provided that normal pumping conditions account for a lead line pressure of 25 pounds. Flowing back pressures are actual relief valve settings, the normal lead line pressure not being taken into account except as it is included in the total pressure.



These shots, taken from various angles, show the simplicity of the construction of the manifold. In the second view, the riser in the background is a pull-rod support, not a part of the installation.

Choice of Pressure

Final choice of the most beneficial pressure at which to operate the back pressure manifold should be the result of experiment. The firm making the 19 installations previously mentioned found through experimental variation that 125 pounds seemed to be the ideal pressure to hold on their wells. Production in another vicinity may reasonably be influenced somewhat differently to obtain the same result.

A concern operating in another section of the Panhandle area experimented with pressures ranging from a low of 70 pounds per square inch to a maximum of 150 pounds. A final choice of between 75 and 90 pounds was made. Subsequent operation demonstrated the applied pressure was adequate. Pulling jobs made necessary through paraffin trouble were materially decreased.

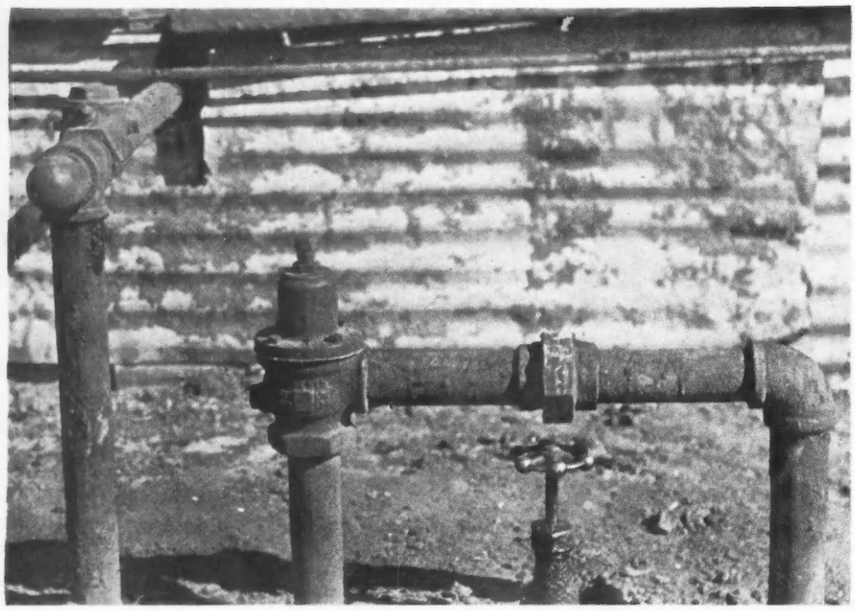
Purging Ability A Factor

In adjustment of the relief, or back pressure valve, the ability of the producing well to purge itself through the tubing is an important factor in determining the back pressure. The valve must be set high enough to keep the well from flowing off periodically through the tubing. Some wells in the Panhandle sector can clean the tubing at 70 or 90 pounds. Therefore, if the relief were to be set at that point no effective back pressure would actually be held. The final setting must prohibit the well from emptying the tubing as this function would allow comparatively rapid deposition of paraffin.

Adjustment should be checked by a pressure gauge about once each week, unless there is reason to believe that the setting is off. Not more than two minutes should be necessary unless the relief must be reset. In estimating the correctness of the held pressure, the operator can gauge the production discharge through the by-pass by listening to the surge through the fittings. This will be found to occur intermittently with the timing of the pumping stroke, although a few strokes may fail to overcome the held pressure. This latter condition is variable with the pressure being applied, generally being more pronounced with relatively high and low settings. Some types of controls do not always produce an audible sound. The action of these can be checked by placing the hand on the relief and by noting the change in the vibration denoting the flow.

Function of Manifold

A manifold that is functioning correctly effects the retention of relatively large volumes of crude in the tubing at all times. This tubing charge also supports a volume of paraffin that under ordinary operation would be deposited near the top of the string. Under back pressure conditions it is indicated that the held paraffin is in a state of suspension-



Lead line from a well producing from the dolomitic zone of the Pampa sector of the Texas Panhandle sohwing manner of connecting in the back pressure manifold. On this installation the connection for checking the functioning pressure of the relief valve is on a separate riser to the left of the picture. The production passes directly through the manifold control and into line to stock.

solution within the fluid column. By opening the regular valve of the back pressure manifold daily the tubing charge is reduced to normal pumping status.

This purging of the string of tubing through the release of held back pressure allows the well to clean itself swiftly, carrying paraffin held in the fluid column out through the lead line and the pressure manifold. The swiftness of the exhaustion of pressure in the tubing when it dumps in this manner, also produces a disruption of paraffin clinging to the walls of the tubing and allows this quantity to be discharged from the tubing string. Making this action even more complete is the fact that the paraffin deposited under back pressure conditions is probably not as adhesive, or solid, as that deposited under normally pumped production.

It might be assumed that the discharge of paraffin through the manifold and into the lead lines in this manner would produce a sludge condition in lead lines. Such has not been noticeable, although particular attention has been given this possibility. Neither has bad tankage been noted.

Should Dump Daily

The process of dumping the tubing by opening the regular valve on the lower leg of the pressure manifold should be a daily operation. The tubing immediately flows off when the valve is opened, ridding the string of suspended paraffin. Regular attention to this minor task could be one reason why some back pressure operations have been more successful than others being tried where apparently similar conditions are present. Upon causing the back pressure manifold to again function following blowing down of the tubing, which requires but a few minutes, the pumping equipment quickly rebuilds the tubing pressure to relief setting. After closing the release valve possibly three to ten pump strokes are made before the production begins discharging through the relief valve.

Other Influencing Factors

A great majority of the pressure manifolds in use in the Texas Panhandle are passing production coming from the dolomitic sections. A few installations have been made on white lime wells, and these apparently are functioning as well as the others. One well producing from Granite wash is so equipped, and is giving satisfactory service. Production is coming from between 3000 and 3400 feet, from pay sections that range from less than 80 feet in thickness to as much as 200 feet of broken pay.

Almost all wells of the sector have been shot, and a number have been treated with acid. Almost all pumping equipment in use is standard. Individual powers that were generally used during the early life of the area are in many cases being replaced with central powers.

Theoretically, the holding of 125 pounds back pressure on a producing string of tubing amounts to an increase in dead load equaling an increase in well depth of approximately 425 feet. This calculation must be based upon the gravity of the oil or fluid, the column head, etc., all of which is convertible into feet of hole. No additional rod weight is included for the application of the principle.

Opposing the theory of apparent increase in columnar weight through the applying of back pressure, dynamometer cards taken of the polish rod load show a reversed effect as actually being present. Interpretations of energy determinations varied on different wells, but in general were similar to the conditions shown in the table below existing on the same well with and without the use of back pressure equipment:

An engineering opinion explained the reduced lifting horsepower against a held back pressure as being derivable from the reduction of friction. Under ordinary conditions of production, he stated, paraffin partially solidifies and in so doing builds up natural friction to rod movement. Under back pressure conditions of pumping wells the tendency of the paraffin to solidify is less pronounced, with the result that the particles of paraffin are more minute, more mobile, and consequently productive of a lessened friction. In ad-

	Well under normal operating condition. Back pressure of 25 pounds due to long two inch lead line to storage	Well under back pressure conditions, and holding a total pressure on the tubing of 120 pounds
Maximum Load	7,450 pounds	7,350 pounds
Minimum Load	2,500 pounds	2,400 pounds
Area of Card	0.90	0 80
Length same	2.45	2.45
Average Effective force	2,200	1,960
Polish Rod Horsepower	3.69	3.38

Both the foregoing tests were made on equipment being operated at 20 strokes per minute. The results make the theoretical in error in practical application.

dition to these factors, the holding of the back pressure undoubtedly reduces the apparent weight of the fluid column by the retention of gas volumes, which has the dual action of decreasing the gravity of the column of fluid, and also increases the agitation of the crude in the tubing.

Gas Causes Suspension

Solution of the gas in the fluid decreases the viscosity of the production, in this manner reducing the per foot lifting cost. Keeping the crude physically active by retaining gas volumes in the column results in a suspension of paraffin within the fluid. With a reduction of the pressure the gas expands through a greater volume than if the production was made at lower pressures, this action in theory breaking down partially formed units of paraffin.

Function of temperature following expansion is difficult of explanation. The effect of lowered temperature upon deposition of paraffin is open to question; particularly so in the light of recent experimental work. It appears that a synthesis of refining resulting from the mechanics of production might more readily account for paraffin deposition than decreased temperature through release of pressure.

Operators have considered the question of water entry, or normal inclusion in production obtained by the back pressure method, without arriving at definite conclusions. Apparently production through a back pressure manifold does not increase the tendency for a cut fluid to emulsify. Any other reaction might be local. Water and control of pressures may have relation. Checks should be made.

The equipment normally used on some wells does not allow the direct application of the back pressure principle. Some operators would have to reduce the well head to allow the application of back pressure to the fluid column in the tubing without at the same time applying the pressure to the casing. In the manner of hooking up the wells discussed, the pressure was held only within the tubing, from the relief valve to the plunger of the pump.

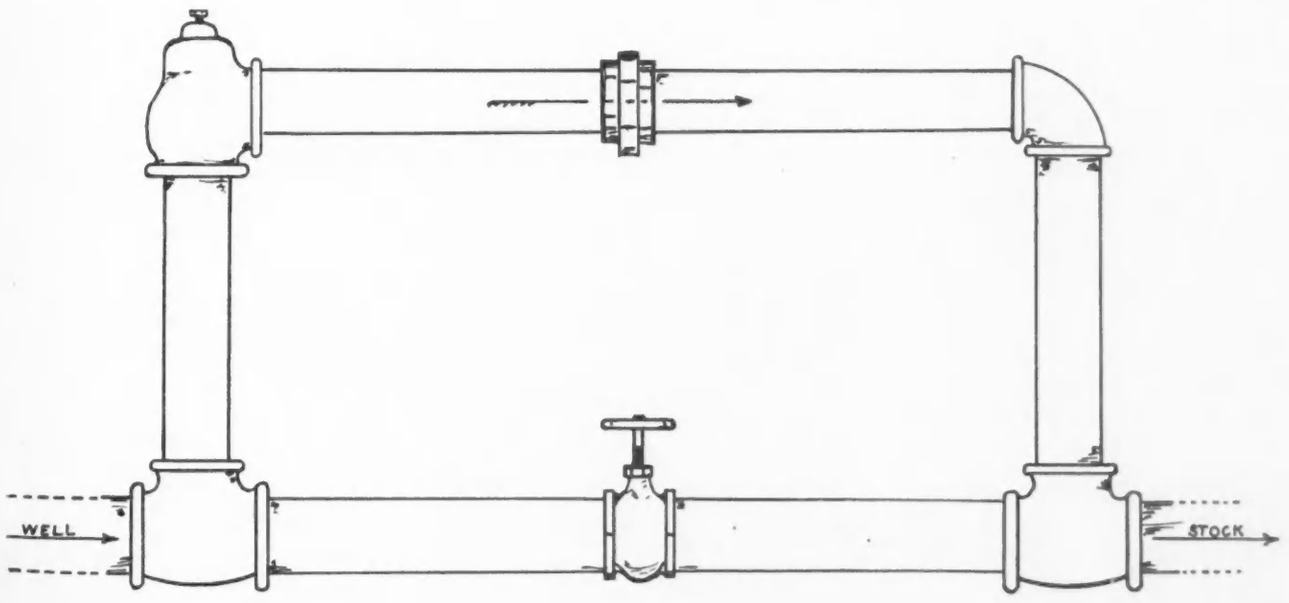
Indicates Tubing Condition

Successfully holding back pressure on tubing is assurance that the tubing is in fair shape. If, as in one case, pressure could not be held on the tubing for a time of any duration, there is every reason to check the string for leaks. Pull jobs following such indication found split joints, broken threads, corrosion pits, and other imperfections not apparent when the well was operated under normal pumping conditions.

Practice has demonstrated that it is not well to apply back pressure on a well with the idea that the means will effect a clean out job of paraffin already present. Installations should not be made on an old well that is a regular offender through paraffin trouble, with the hope that the equipment will eliminate the trouble, without first cleaning the well. But after cleaning, the installation can be made with reasonable expectation of successfully and materially decreasing the paraffin trouble, and consequently the cost of cleaning out.

One firm operating in the area has checked four wells equipped with back pressure manifolds for the past two years. There was no type of pull job on any of these wells for the two year period. This makes a practical record, but one that probably overevaluates the benefits of the back pressure method. The means is becoming more popular, and when given regular attention is an excellent preventive, but not necessarily a cure-all. Unquestionably, local conditions play a large part in efficient operation of the devices.

A hookup system used in the Texas Panhandle for applying back pressure on flow lines as a means of controlling paraffin accumulations.



Water-Flooding of Oil Sands

By PAUL D. TORREY, Geologist,
The Sloan & Zook Company

PART II

Geologic Factors; Physical and Lithologic Characteristics of Producing Formations; and Theoretical Considerations of Flooding.

Structure of Field

A KNOWLEDGE of the geologic structure of an oil field in which intentional water-flooding is contemplated may be regarded as being most essential. In the Bradford field, the accumulation of oil has been controlled by a large anticlinal fold,[4] but the major structural dip is so low, insofar as individual properties are concerned, that it has had very little effect upon flood water movement. However, in a few areas where the dip of the strata is over one degree, it has been found most advantageous to flood up the dip. Flooding down the dip is contrary to the natural association of oil and water, and it has been definitely established, both in the Bradford field and in northeastern Oklahoma, that flooding down dip results in very rapid water migration, and therefore is responsible for the by-passing of considerable quantities of oil.

Unitization Ideal

From the information so far established on the effects of structure on flood movement, it would seem most desirable to commence new water floods along the lower flanks of the structures controlling oil accumulation. This would be of particular importance in fields where some natural water encroachment is already active. The ideal situation for flooding a field located on a fairly well defined fold, and in which sand conditions are favorable, would be a cooperative development among all of the operators, providing the field is owned by diverse interests, in which the water would be simultaneously introduced into the sand through a line of intake wells which would correspond and be parallel to the lowest contour that limits the oil production of the field. Further, to insure a fair return to all the operators involved, it would be most desirable to unitize the entire field, and the writer believes that this type of development will be more closely followed in the future than it has in the past.

So much has been written regarding the benefits of unit operation in new fields that certainly it is not necessary to repeat them, but it can be stated most definitely that all of the advantages that can be expected from unit operation in a new field could be anticipated in any form of reworking operation, and particularly in connection with water-flooding.

Flooding Up Dip

In fields where the producing formation is relatively level, and accumulation of oil has been limited by changes in the lithology of the pay, water-floods may be established to suit the convenience of each operator. Where accumulations of oil occur along monoclinal slopes, and the dip of the pay is more than one degree, it is believed that the most satisfactory results can be obtained by commencing flooding operations in the lowest structural part of the field and flooding up dip. Flooding up dip in certain of the smaller fields of Allegany County, New York, has been eminently satisfactory, and has amply repaid the operators for the care that they have exercised in selecting the location for their initial developments.

Continuity of Sand and Sand Lenses

The most successful results that can be realized from water-flooding operations will naturally be obtained where the producing formation is a continuous and uniform body. An ideal condition would, of course, be a massive, sheet sand formation with

THIS is the second part of a series of articles by Paul D. Torrey on water-flooding. The first installment appeared in The OIL WEEKLY of November 22, and presented a history of the process. The remaining will take up such matters as development of water-flood properties, drilling practice and surface equipment, operation of water-flood properties, and the application of electrical well logging.

An abstract of the paper was presented before the fifth annual meeting of the Illinois Mineral Industries Conference.

[4] Newby, Jerry B., Torrey, Paul D., Fettke, Charles R., and Panyity, L. S., Bradford Oil Field, McKean County, Pennsylvania, and Cattarangus County, New York: Am. Assoc. Petroleum Geologists, "Structure of Typical American Oil Fields," Vol. 2, pp. 407-442, 1929.

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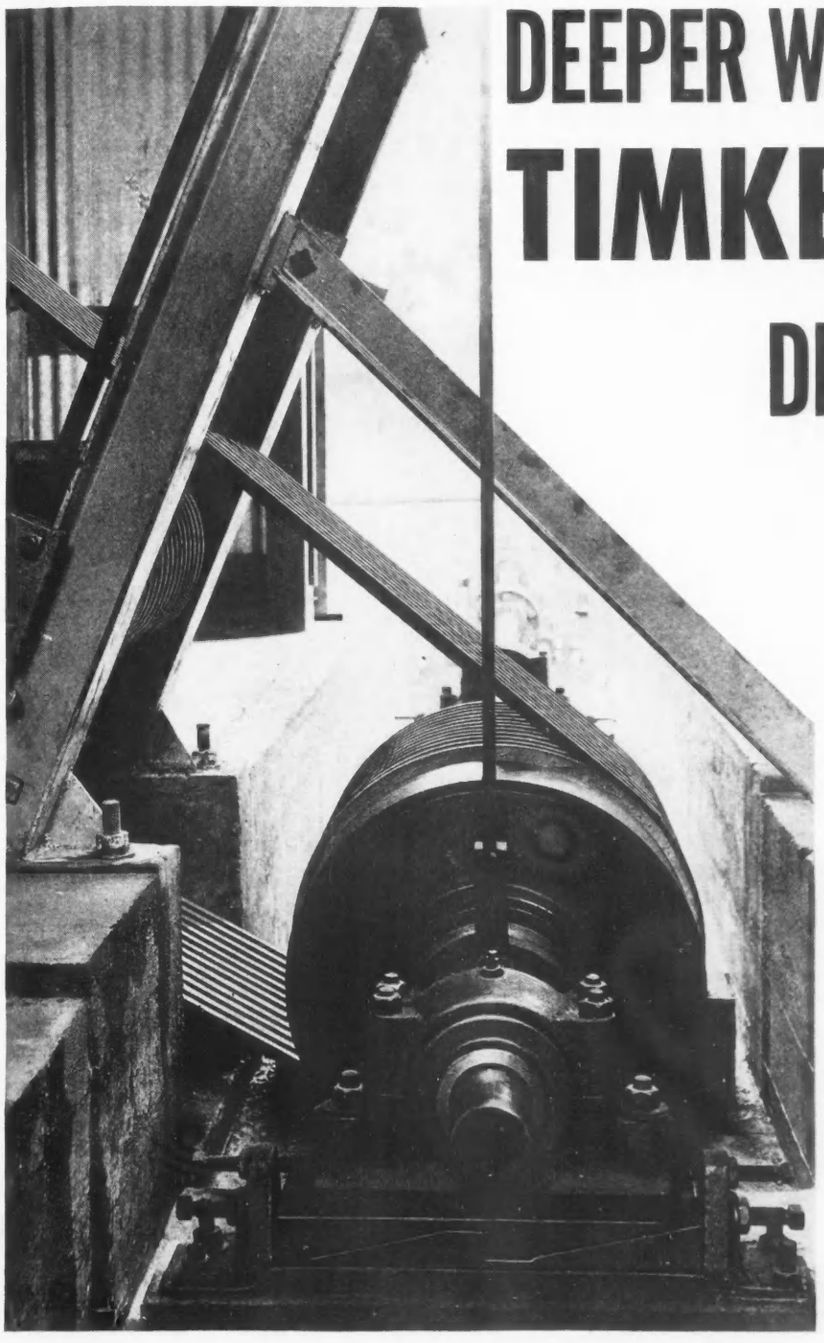

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homogeneous porosity and permeability both vertically and horizontally, and with uniform pay thickness. Variations in physical characteristics of the producing formation from well location to location must be generally expected, owing to the lack of uniformity of sedimentary conditions; and since most sands were not deposited upon a level basement, irregularities in thickness frequently occur at the bottom of the sand and to a lesser extent at the top. Furthermore, oil sands generally do not thin out as a smooth wall, but rather they break up into lenses and tongues which sometimes do not extend to adjacent wells even under the close well spacing conditions required in ordinary practice.

If the porosity and saturation of the sand is fairly uniform, there is obviously more oil present in thicker parts of the sand than in the thinner parts, and such being the case, and if it is at all feasible, it is most desirable to flood from thin sand sections to thick sand sections. The reason for this is that it is most illogical to push oil away from a thick sand section where it may be easily recovered, to a thinner or lenticular section where the oil may be trapped by shale breaks or by lensing out of certain members of the sand body.

It is, of course, impossible to plan or change flooding operations to conform to sand variations under every condition. But if a study of the records of the old wells from a field reveal irregularities in the sand body, it would be most advisable to attempt to plan the well location pattern to conform as closely as possible to conditions as they are found to exist.

Presence of Water in the Producing Formation

The presence of appreciable quantities of water in the producing formation may be regarded as being most unfavorable for successful water-flooding, since the water present cannot help but reduce the amount of oil available in the sand.

However, the fact that wells in a field are making water along with the oil should not prevent a careful investigation of the flooding possibilities of a field, since it may be found that the water is coming from a source that may be eliminated. If the water occurs in the bottom of the sand, the water bearing part may be separated from the oil bearing part by a definite break; and such being the case, the plugging back of the wells to the bottom of the oil pay will prevent the water from coming into the holes. Furthermore, it will frequently be found that only parts of the field, and this is usually the lower structural areas, have been affected by natural water encroachment. Under such conditions the introduction of water into the sand under proper control may accelerate flooding action in the areas already affected by water, and at the same time provide a much more effective depletion of the unaffected areas.

It should be pointed out, however, that attempts to flood artificially fields in which the producing formation carries any appreciable quantity of water have not proved to be very satisfactory, and unless rather unusual conditions exist in the field, water-flooding could not be recommended.

Gas Pays and Gas Content of the Sand

In many fields where accumulation is controlled by anticlinal structure, the sands on the higher parts of the structure are completely or partially filled with gas. The Bradford field is an excellent example of accumulation of this type. In the highest parts of the structure, the sand was originally largely gas-bearing with a relatively thin oil pay in the lower part. Going down dip, the amount of gas pay in the sand decreases and the amount of oil pay increases.

Flooding experience in the Bradford field soon indicated that it was very necessary to pack off the gas pay in the water intake wells, since this pay had been largely depleted of its original gas content over the many years of productive life of the field, leaving an open medium which offered very little resistance to water movement. In intake wells where the gas pay was not packed off, the water would migrate very rapidly through the gas pay, leaving the oil pay practically unaffected. Similar results have been obtained in certain of the floods in the Bartlesville sand of northeastern Oklahoma. It, therefore, can be stated definitely that no flood can be successfully operated where such conditions exist without packing off or cementing any gas pays that may be present.

Data From Old Fields

Even in very old fields, it is generally possible to obtain some idea of the original gas/oil ratio. If the gas/oil ratio was unusually high, it would be natural to regard the field, insofar as its flooding possibilities are concerned, with some suspicion. However, much of the gas produced may have come out of solution from the oil, and in that event the deciding factor in determining whether the field is a desirable prospect for water-flooding can only be definitely ascertained by saturation tests of cores taken from the sand. It may, of course, be concluded that any free gas present in the sand will reduce the volume of oil originally present and will have a decided effect on the volume of oil left after a long period of natural production. Gas that may have been produced out of solution from the oil would not have such a harmful effect, and, as it will be shown later, the compression of gas in the sand in advance of the migrating water from the intake wells is of material assistance in moving the oil into the producing wells.

Quality of Oil

Had it not been for the excellent qualities of Bradford crude, the field probably would have been abandoned in the period prior to the general inauguration of water-flooding. The oil ordinarily commands a premium over other grades of Pennsylvania grade crude. An operator considering the water-flooding of a previously untested field would naturally be certain of the refining desirability of the crude that he anticipates producing. If the oil does not have a ready market, it obviously would be an unsound investment to drill the additional wells and install the other necessary equipment required for efficient water-flooding operations. Even if the crude produced fulfills all of the requirements of a most particular refiner, a careful investigation of certain of its physical properties should be made to determine whether it will respond favorably to flooding action. The two main factors in this connection are the viscosity of the crude and its tendency to emulsify.

Consider Viscosity

It just so happens that the viscosity of Bradford crude is not too high to affect materially efficient flooding action. In consequence, little attention was paid to this property of the oil in connection with the earlier flooding operations. In more recent years, however, when attempts have been made to flood other fields, it has been found that crudes that possess a much higher viscosity than Bradford crude do not respond to flooding action in the manner expected, notwithstanding the fact that

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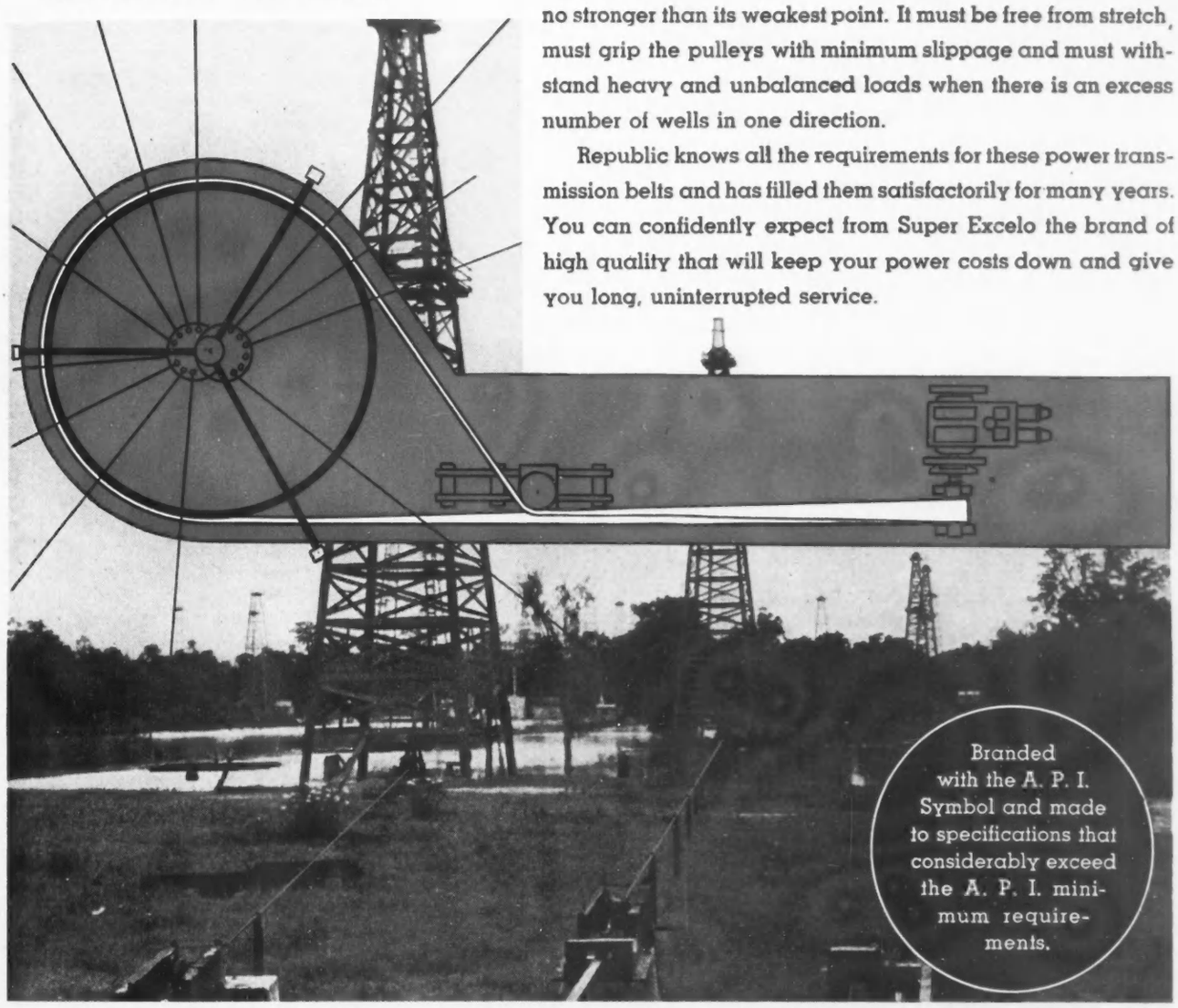

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other conditions in the sand body might be regarded as being quite favorable for flooding operations. Oils of high viscosity naturally are more resistant to displacement by water drive, and particularly in fields where the sand possesses high permeability, the water may break through the pore spaces leaving the crude adhering to the individual sand grains. From both practical operating experience and laboratory investigations, it has been established that oils possessing a Saybolt Universal viscosity 35 to 40 seconds at 100 degrees are best adapted to water-flooding purposes. It is very unlikely that an oil possessing a Saybolt Universal viscosity of more than 40 seconds at 100 degrees would flood as efficiently as a less viscous crude.

Tendency to Emulsify

The tendency of the crude to emulsify should be thoroughly established in the investigations of the water-flooding possibilities of any field. The crude produced in the Bradford field is very stable and does not even form a temporary emulsion when water is introduced into the sand, but it has been found in other fields of western Pennsylvania that water-flooding will be responsible for permanent emulsions which require chemical or electrolytic treatment to break down. The formation of temporary emulsions is not a very serious problem, since the oil can usually be freed from the water by moderate heating, which is universally required by the pipe lines in cold weather to provide a free flow of fluid into their gathering lines.

Formation of permanent emulsions is an entirely different problem. These will require special treatment, and if it is found that such treatments will be required, a careful investigation of the costs should be made before starting a flood, since the margin of profit which might otherwise be expected may be required to condition the oil so that it will be acceptable to the pipe line company and the refiner.

Porosity and Oil Content

The porosity of an oil sand is a most important factor in the ultimate success of a water-flooding operation, for the porosity of the sand determines its capacity to hold oil. The percentage of the pore spaces filled with oil is of equal importance, for it is obvious that under similar lithologic conditions a sand containing a large oil content will yield much better results than one containing a low oil content.

Water-flooding under pressures greater than the normal hydrostatic pressure has been fairly successful in sands possessing an average porosity of as low as 7 percent, but the best results have been obtained from somewhat higher porosities. The average porosity of the Bradford sand is approximately 11.5 percent, although some samples have possessed a porosity of from 25 to 28 percent.

Saturation Factor

Average oil saturation of the Bradford sand, based upon many laboratory analyses using the retort method of determination, is about 40 percent. The oil saturation normally increases going down the dip from the highly gas saturated parts of the structure, and it is also considerably higher on properties which were developed under natural conditions of production on a wide well spacing pattern. From a multitude of correlations between oil content of the sand and actual oil recovery, it has been established that about 40 percent of the total oil content of the sand is recoverable by water-flooding. The most efficient floods in uniform sands will probably recover around 50 percent of the oil content of the sand. Assuming conditions in other fields analogous to Bradford, an oil content of 15,000 barrels per acre should result in an average recovery of 6000 barrels per acre by water-flooding, and under unusual circumstances of exceptionally uniform sand conditions and efficient operations, a recovery of as high as 7500 barrels per acre may be realized.

Porosity and saturation of oil sands can be determined only by core analyses, and as Dr. Bell has properly pointed out, the only logical way to ascertain these necessary facts is by systematic coring. Dr. Bell's recommendation is heartily approved and emphasized by the writer. In many instances with which the writer is intimately familiar, the results from water-flooding operations could have been greatly improved by an accurate knowledge of sand conditions, and many times floods which have resulted in failure could have been made into profitable enterprises if the operator had been aware of the conditions confronting him.

Permeability

Permeability of an oil sand may be defined as its capacity for penetration by gases or liquids. Permeability depends upon the porosity and degree of inter-connection of the pore spaces in the sand, the size and shape of the pore spaces, and to lesser extent upon the type of cementing material and the oil saturation. A determination of the permeability of the sand is most essential for successful water-flooding operations, since upon it must be based the most desirable well spacing and the most advantageous water pressure that may be used for development.

Size of Grains

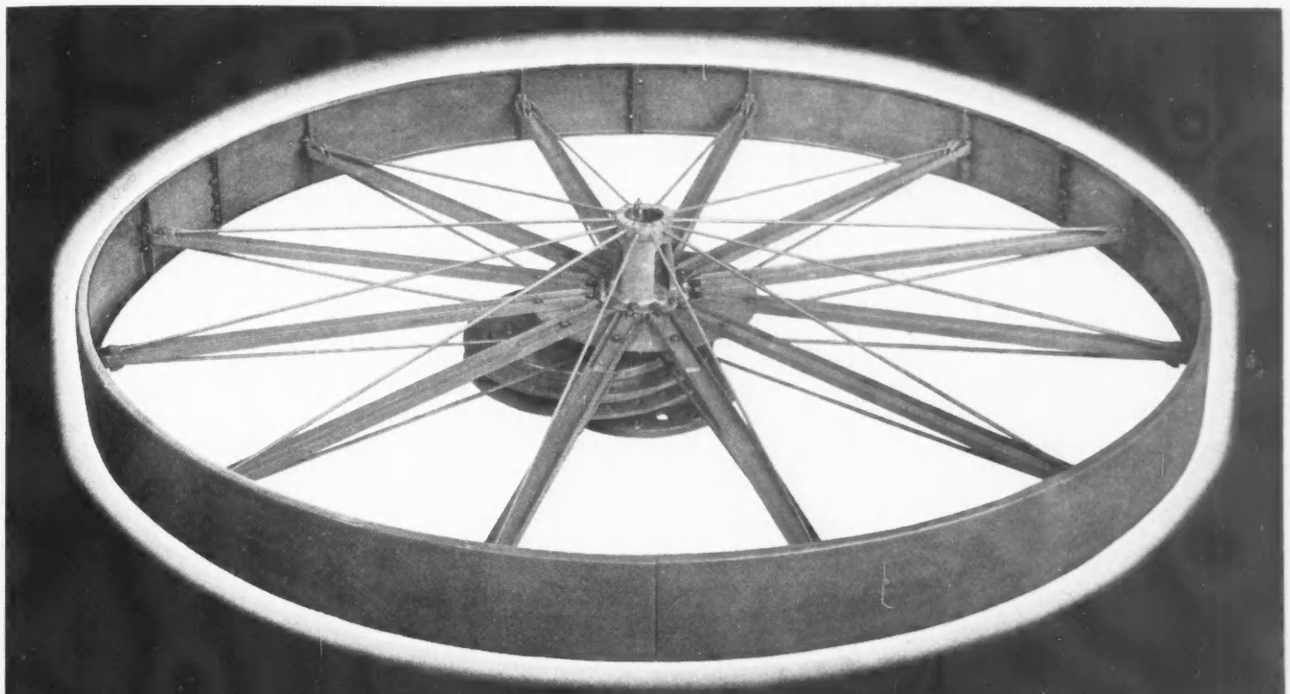
The size and shape of the pore spaces in the sand are dependent upon the size of the individual sand grains and the amount of cementing material between them. It has been found in the Bradford field that an average grain-size of less than 0.2 mm in diameter generally yields the best results in water-flooding. The Bradford sand is made up of quartz grains with small amounts of feldspar, mica, and considerable chert-like material. The grains are angular and interlocking. The interstitial material is brown micaceous clay.

The average grain size of the Bartlesville sand on certain properties in northeastern Oklahoma that are being successfully flooded is somewhat larger than that of the Bradford sand, ranging to as high as 0.5 mm in diameter. This larger grain size usually results in a higher permeability of the sand, which must be taken into account in selecting the proper well spacing and water pressure for a new flooding operation.

The most satisfactory results from water-flooding in the Bradford field have been obtained where the sand has a uniform permeability of from 5 to 10 millidarcys. It should be noted, however, that there are great variations in average permeability throughout the field, as well as wide variations in individual sand sections.

Profitable flooding operations have been carried on in localities where the average permeability is little more than one millidarcy, but under such conditions a relatively close well spacing and high water pressure are required. It should also be brought out that sands having a permeability of as high as 200 millidarcys are also being flooded, and it is impossible to state at this time what the upper limits of permeability will be that will preclude satisfactory flooding action.

If the sand body is fairly uniform and possesses a good oil saturation, there seems to be no good reason why sands of high permeability may not be effectively flooded by proper well spacing and careful control of water input into the intake wells. Here again, the only way an operator can



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be sure of the best procedure is to core his property systematically, and upon the basis of the results of core analyses determine the best methods to employ.

Naturally wide variations in permeability in the sand section will require special operating methods to force a uniform movement of the water through the sand. Fortunately, methods have been developed to take care of situations of this type; these will be described in a following part of this paper.

Cementing Material

From laboratory experiments, Uren and Fahmy[5] have discovered that the kind of cementing material or sand grain coating has a marked effect upon the recovery of oil by flooding. The results of their experiments have indicated that sand grains coated with silica are much better adapted for water-flooding purposes than those coated with lime or iron oxide. These experiments should be thoroughly considered before attempting to water-flood a new field, since they give very useful criteria for the determination of the adaptability of oil sands to water-flooding.

Theoretical Considerations

The actual mechanics of water-flooding have been thoroughly discussed by Wycoff, Botset, and Muskat,[6] and by Wilde.[7] Little can be added to the facts they have presented, and the writer has only in mind setting forth in this paper a few data relating to the action of the water as it moves through the sand which are derived from actual field experience.

It has been mentioned previously that water-flooding has been most successful in fine-grained sands which possess pore-spaces of capillary size. Such being the case, it may be assumed that capillary action is an important factor in the displacement of the oil held in the interstices of the sand and adhering as a film to the sand grains. Water-flooding may therefore be regarded as a combination of capillary and hydraulic action, the capillary effect acting as the displacing agent, and the hydraulic effect providing the motivating agent which accumulates the oil and pushes it toward the producing well.

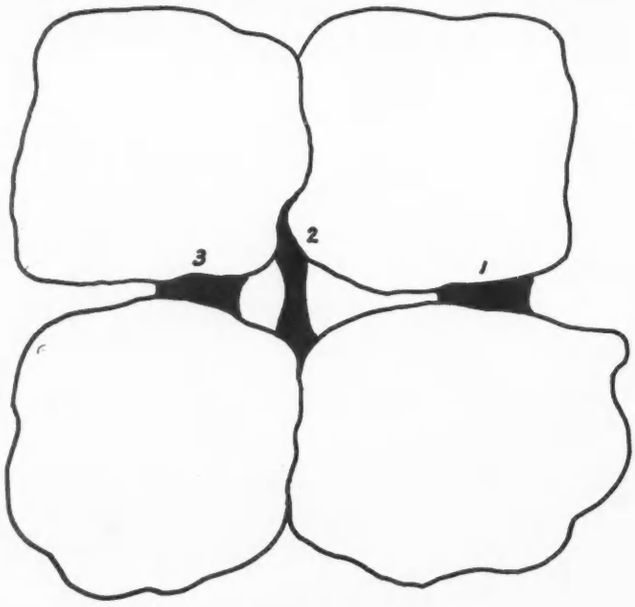


FIGURE 3
Drops of oil moving through the pore-spaces of a sand by water-flooding action

Capillary Action

After a field has experienced a long period of natural production the pore-spaces of the sand are not entirely filled with oil. The sand grains are coated with a film of oil of varying thickness, and the main part of the pore occupied by a bubble of gas. The minute interconnections between the main pore-spaces may be compared to conical tubes. In a conical tube a drop of oil will be concave outward at both ends, but since the smaller surface has the smaller radius of curvature, it will exert the greater pressure against the gas and the drop will move to the smaller end of the tube (Figure 2). In Figure 3 the position of a drop of oil moving through the pore-spaces of a sand by water-flooding action is indicated. As the water under pressure enters the pore-space of the sand, the drop of oil which has moved by capillary action to position 1 moves to position 2. Upon reaching position 2, the conical tube effect previously mentioned pulls the drop to position 3. This process is repeated time and time again, each drop of oil as it moves through the sand being separated from other drops by bubbles of gas. As more oil is picked up and pushed ahead by the advancing water, the pressure naturally increases, resulting in the solution of the gas bubbles in the oil. As the oil drops converge, due to the solution of the gas, the pore-spaces become more entirely saturated with fluid, and the flood then moves forward to the producing wells under direct hydraulic control.

It can be readily appreciated that in a coarse grain sand a capillary movement of the oil bubbles is impossible. Even if a drop of oil advanced to position 2 in the sand as illustrated in Figure 3, it would be so elongated that any application of pressure would break it back to a film adhering to the sand grains rather than moving it ahead to the next inter-connection. Such being the case, the water would tend to drive on through the open pore spaces, leaving much of the oil unaffected. Such action is undoubtedly responsible for the lack of success that has been experienced in attempts to water-flood conglomeratic sands.

[To be continued]

[5] Uren, L. C., and Fahmy, E. H., Factors influencing the recovery of petroleum from unconsolidated sands by water-flooding: Am. Inst. Min. Met. Eng., Trans., Vol. 77, pp. 318, 1929.
[6] Wycoff, R. D., Botset, H. G., and Muskat, M., The mechanics of porous flow applied to water-flooding problems: Am. Inst. Min. Met. Eng., Trans., Vol. 103, pp. 236-237, 1933.
[7] Wilde, H. D., Jr., The value of gas conservation and efficient use of a natural-drive as demonstrated by laboratory models: Am. Petroleum Inst., Production Bull. 210, pp. 4-10, 1932.

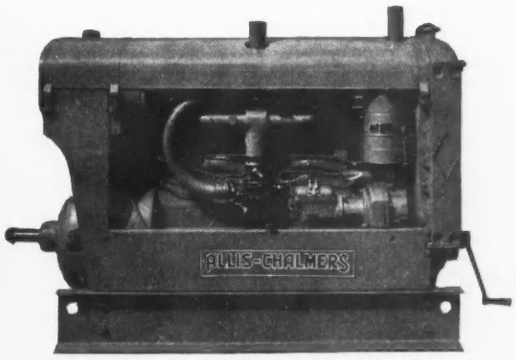
FIGURE 2
Drop of oil in a conical tube of variable diameter

SERVICED *and* PUMPED BY ALLIS-CHALMERS

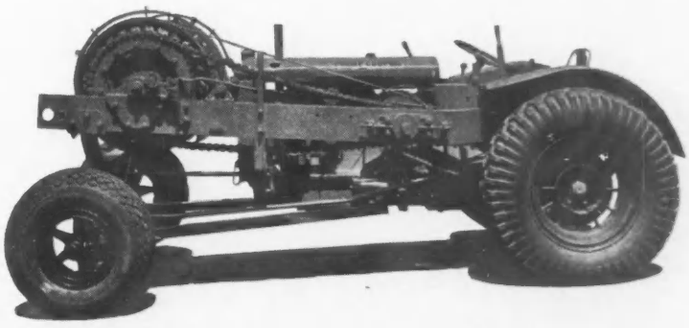
Oil companies all over the world have found it a profitable policy to use well servicing and pumping equipment manufactured by Allis-Chalmers. The well shown above is in the Troy field in Arkansas. The Allis-Chalmers single drum winch tractor was handling 2138' of 4" tubing. The tractor as shown is equipped with a rotary sprocket which permits the unit to be used for power in running rotary tables for drilling, cleaning out and fishing jobs.

The tractor is equipped with 30 m.p.h. road speed which enables it to service wells over a wide range of territory.

The pumping unit is powered with an Allis-Chalmers Model E engine, operating on natural gas.



A-C Model E Power Unit. Torque 375 ft. lbs.



A-C Model UM Winch Tractor. Line pull 31,250 lbs.

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Legal Restraints On Drilling and Production[1]

By NORTHCUTT ELY[2]

Part I of Ely's article went in the history of oil industry legislation on drilling and production. It discussed the factual and legal relationship between drilling and production controls, as well as remedies available for such controls under state laws. Part I also contained an outline of Lyndon L. Foley's six groups of proration plans, with Ely's comment on the workability of each.

Part II of this article is a continuation of court opinions cited to illustrate the author's observations on the legal restraints on drilling and production. "Oil production now appears for the first time to be vulnerable to direct federal regulation," he says.

PART II

IN Head vs. Amoskeag Mfg. Co., a case which sustained a New Hampshire "mill act," the United States supreme court said:

"When property, in which several persons have a common interest, cannot be fully and beneficially enjoyed in its existing conditions, the law often provides a way in which they may compel one another to submit to measures necessary to secure its beneficial enjoyment, making equitable compensation to any whose control of or interest in the property is thereby modified.

"The statutes which have long existed in many states, authorizing the majority of the owners in severalty of adjacent meadow or swamp lands to have commissioners appointed to drain and improve the whole tract, by cutting ditches or otherwise, and to assess and levy the amount of the expense upon all the proprietors in proportion to the benefits received, have been often upheld, independently of any effect upon the public health, as reasonable regulations for the general advantage of those who are treated for this purpose as owners of a common property.

"They are somewhat at variance with that absolute right of dominion and enjoyment which every proprietor is supposed by law to have in his own soil; and in ascertaining their extent it will be useful to inquire into the principle upon which they are founded. We think they will be found to rest for their justification, partly upon the interest which the community at large has in the use and employment of mills and partly upon the nature of the property, which is often so situated that it could not be beneficially used without the aid of this power."

In Fallbrook Irrigation District vs. Bradley, a case which sustained the taxing power of a drainage district, the supreme court said (p. 163):

"If it be essential or material for the prosperity of the community, and if the improvement be one in which all the landowners have to a certain extent a common interest, and the improvement cannot be accomplished without the concurrence of all or nearly all of such owners by reason of the peculiar natural condition of the tract sought to be reclaimed, then such reclamation may be made and the land rendered useful to all and at their joint expense. In such case the absolute right of each individual owner of land must yield to a certain extent or be modified by corresponding rights on the part of other owners for what is declared upon the whole to be for the public benefit."

The applicability of the doctrine of these cases to the devlopment of an oil field would seem to depend upon the factual question of whether loss of reservoir energy and undue drainage would or would not be caused by independent competitive development.

In Thompson vs. Consolidated Gas Utilities Corp., the supreme court said:

"We assume that the prohibition of any wasteful conduct, whether primarily in behalf of other owners of gas in the common reservoir, or because of the public interests involved, is consistent with the constitution of Texas and that of the United States, and that to prevent waste production may be prorated. We assume, also, that the state may constitutionally prorate production in order to prevent undue drainage of gas from the reserves of well owners lacking pipe line connections."

The statute and regulation held invalid in that case were struck down because they were sought to be applied in the absence of any drainage between the properties which they affected.

The Law and Drainage

Assuming drainage, with or without a net loss in recoverable content of the reservoir as a whole, it is submitted that the state has the authority to enforce its power to control production and drilling in such manner as to harmonize the two and minimize the threatened drainage. And if this requires that the owners be permitted to develop their property, if at all, only through the medium of drainage, proration, or drilling districts, the state has power to withhold its permission unless drilling and production be effected by or through a district organization.

As a practical matter, however, the statutes have not yet gone that far, and it may not be necessary to do so. The New Mexico and Oklahoma statutes may provide a sufficient deterrent to over drilling, through their system of acreage allowances of production within each spacing unit, without fully suspending the individual's right to drill on less than the standard spacing unit.

The District Possibility

Nevertheless, the way appears open to confer upon districts of this sort a corporate character, and to limit exploitation to this method. The quasi-public status to which they would be entitled, if incorporated, appears settled by the Fallbrook case. Their power to prorate costs and benefits is not dependent upon the power of eminent domain, as that case, the Amoskeag case, the City of Oxford and Tysco cases demonstrate. A unit need be no larger than the demonstrated drainage area of a well. Production could be allocated among districts rather than among leases, upon a volumetric basis which would equalize pressure gradients and minimize drainage between districts. The production allotted to a district would be produced only from those wells having the best ratio of production to expenditure of reservoir energy, but expenses

[1] Before the Mineral Section, American Bar Association, Kansas City, September 29, 1937.

[2] Of the District of Columbia Bar.

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and recovery would be allocated among all properties in the district upon the bases approved in the City of Oxford and Tysco cases, or on similar bases dominated by the acreage factor.

Compulsory Cooperation

That compulsory cooperation on a large scale may not be far distant is indicated by water conditions in East Texas field, where the inclusion or exclusion of 60,000 barrels of water a day in the fields allowable apparently spells the difference between maintenance or rapid decline of reservoir pressures. The question is how to re-inject that water, within or without the limits of the field, so as to maintain the water drive on a community basis. Perhaps a drainage district, organized under the health laws, may be the way to dispose of that waste water by returning it to the reservoir at the joint cost of the properties from which it is piped away.

4. Indirect Controls on Drilling

In addition to the methods of direct control mentioned above, there are several untried indirect approaches.

Perhaps wasteful drilling may be controlled by an adaptation of the "chain store tax" on drilling, graduating upwards as drilling density increases on a standard area.

Or regulation of the form of lease contracts, requiring standard conservation clauses to supplant the clauses impelling over drilling, might be attempted.

Again, restrictions might be placed upon pipe line extensions to unnecessary wells, either directly, or by way of taxation, or by limitation of the amount moved from such wells into commerce.

In short, the state's power to control drilling as part of a plan for the regulation of production has been tested only in its most elementary forms.

CONCLUSION

It must be recognized that state petroleum control is producer's legislation. With the possible exception of the Indiana Gas statutes of the nineties, and unsuccessful gas-exportation laws in some other states, every important oil and gas law has come on the books because the industry clamored to have it placed there. Every extension of state and federal authority has come at the invitation of the industry.

The legislative arena chosen has been the legislature of the oil producing state. Even under the petroleum code, state commissions and state laws were the designated production enforcement agencies. Seven legislatures have in effect determined whether 48 states should enjoy the use of this liquid fuel for a long or short period, in abundance or in scarcity.

The consuming public has never become sufficiently aroused to transfer the issue to an arena dominated by the votes of the consuming states, that is to say, congress. This is in peculiar contrast to the experience of the electric industry. Both petroleum and electric power supply about 26 million customers and claim investments of twelve to thirteen billion dollars. Perhaps the difference in public concern is due to the fact that the pipe line has taken the petroleum market to the well head, whereas the transmission line brings electric power to a market at the customer's meter on his back doorstep. Prices of both products have gone steadily down, yet federal regulation of electric power has just as steadily increased.

Vulnerable to Federal Regulation

Oil moves to markets in a continuous stream through a pipe line system equal in length to one-third that of the major railroads. Oil production now appears for the first time to be vulnerable to direct federal regulation, under the doctrine of the Wagner Labor Act cases. This is aside from the possibility of indirect federal control of oil production through regulating extensions of interstate pipe lines to new fields, as developed before the Mineral Section of the American Bar Association by James G. Stanley, and from the quotas-in-commerce theory as developed by Judge Amos L. Beaty. Control of production may be within the concurrent jurisdiction of both the federal and state governments. State control must be efficient and wise if it is to continue as the sole conservation vehicle.

Gasoline Taxes the Critical Margin

It is difficult to state the point at which there will be a consumers' reaction against the price of gasoline or against regulation of the petroleum business by the petroleum states alone. Gasoline taxes are probably the critical margin. But even as to those, it is hard to forecast the resistance point. In Great Britain between 1920 and 1928, the tax on gasoline or motor spirit rose from four pence to eight pence per imperial gallon, or to more than 12 cents per United States gallon, yet consumption of motor spirits has increased about 30 percent since the eight-penny tax was imposed in 1931.

Interstate Compact

The interstate oil compact now in force has one advantage over the petroleum code which preceded it. The code's emphasis was on stabilization, not on conservation, whereas the compact commits the states to the adoption of a uniform conservation program centering around the protection of reservoir energy. It requires the member states to enact laws to prevent "the drilling, equipping, locating, spacing or operating of a well or wells so as to bring about physical waste of oil or gas or loss in the ultimate recovery thereof" and to prevent "the inefficient, excessive or improper use of the reservoir energy in producing any well." To date the compact commission has not taken advantage of the opportunity to bring forward these advanced uniform laws. The ultimate success or failure of the compact will depend on the degree to which it brings about the enactment of effective conservation legislation. To date the laboring oar in the study of unnecessary drilling and its remedies has been left with the trade associations and the professional societies.

In a Blind Alley—Maybe

The development of legislative restraints on drilling and production has been a process of painful evolution. The industry long ago chose the course of that evolution, which was the development of the state's police power, rather than federal legislation or individual agreement. We might remember the story of the African mud-fish, the "kamongo," that many million years ago evolved to meet a period of drouth in such a way that it could seal itself in the mud and survive many years without water. But in so doing, it missed the chance to evolve legs and to move on up the animal scale. It evolved down a blind alley, and to this day is nothing but a mud-fish, although a wonderful one in its way. It may be that when the state-control technique of oil conservation has been perfectly developed, we may likewise find ourselves in a blind alley, while the consumers are evolving their own control methods in another and more expansive environment.

Circumferential Field Welding of Casing

L. R. HODELL, Carter Oil Company, Tulsa

ABSTRACT

THE principal factors necessary for the successful welding of casing in oil wells are: (1) A readily-weldable steel; (2) trained personnel; (3) necessary auxiliary equipment.

By readily-weldable steels is meant primarily steels of low carbon content. Ordinary API grades "C" and "D" steels are not considered readily-weldable. A carbon content of 0.35 percent is considered the absolute top limit for steels for casing that is to be welded.

Personnel trained in the welding of casing is practically non-existent. However, welders who are competent in other techniques may be instructed in the welding of casing, and after a few days' practice will be proficient.

Necessary equipment for handling casing that is being welded consists of pick-up and line-up clamps and other line-up devices, slip elevators, spiders with automatic slips, and goggles for the drilling crew, which will protect them from the injurious rays of the arc.

The joint efficiencies obtained in welding casing have been studied by means of making full-joint pull-out tests. The results indicate that slip- or sleeve-type joints give relatively low efficiencies. The bell-and-spigot, the straight-butt, and the double-bell and chill-ring joints yield efficiencies of 80 to 100 percent readily, and by discreet choice of joint and technique may yield efficiencies from 90 to 100 percent.

Time analyses as to the running of pipe by means of welding indicate that the bell-and-spigot pipe may be run more rapidly than the butt joint. Tables are given for the rates of welding of various types of joints with a varying number of welders.

Cost studies indicate that, owing to the fact that casing for welding may be bought for from 10 to 15 percent less than threaded and coupled casing, when the cost of welding is considered a respectable profit will be left to the operator.

The statements and opinions expressed herein are those of the author, and should not be construed as an official action or opinion of the Institute or of this magazine.

Paper presented at Eighteenth Annual Meeting, American Petroleum Institute, Chicago, Illinois, November 12, 1937.

WHILE the welding of oil well casing, including oil strings, is a proven success, the practice is as yet a relatively new one. For that reason, the methods and results here discussed are not presented as the best methods or the best results to be had in the welding of casing, but as the methods which we have used and the results which we have obtained. It is reasonable to suppose that other and better methods and results may eventually be developed or, for that matter, may even now be in existence.

The Welding Problem

The first problem encountered in welding casing is the welding problem itself, which is really twofold. In the first place, the prime requisite to the whole process of welding casing in the hole is to have trained welders who are not only good welders generally, but men who have also been trained in the welding of casing. In the second place, it is desirable—even an absolute necessity—that the pipe be fabricated of readily-weldable steel.

The first of these two matters involves a point that every employer of welders already knows. Welding has in the past too often been regarded as a general process or trade. Those not familiar with the trade have been under the impression that a man who is a good welder at one type of work would necessarily be a good welder at another type of work, and it is only necessary to transfer him from one job to another.

Specific Training Needed

Actual experience, however, of those hiring welders has shown this to be fallacious. Practically all concerns which hire welders in considerable numbers do so only after the welder has successfully passed a test. It is common knowledge that many men who have welded in tank shops on pressure vessels and plates have been unable to pass the test given by pipe line contractors as a condition for their employment. It is equally true that many welders who are known to be highly satisfactory at pipe line welding have been unable to pass the tests as given by the manufacturers of pressure vessels and concerns which weld on plate. It is also well known that welders who have been highly satisfactory in either or both of these two applications of welding have been

unable to pass the test requirements of airplane manufacturers.

In fact, it would be possible to go on indefinitely in this manner, but the situation may be summed up simply by saying that each application of welding requires a definite technique, and these techniques are seldom, if ever, interchangeable. This general truth holds for the welding of casing.

These facts are mentioned here simply in order to caution beginners, and are not intended to discourage anyone. While it is true that a definite technique is required for handling the welding of casing, it is also true that this technique can be learned in a relatively short time by practice—it being assumed, of course, that the welder or welders who are to learn are already expert in the application of some other technique.

It is our own experience that thoroughly qualified welders, properly instructed in the necessary technique of welding casing and given nipples to set one on top of the other and told to weld on them until they can hold their puddle in position, will ordinarily not require more than two days' practice before they are able to make a satisfactory weld.

Two-Part Technique

The welding technique should be divided into two parts, viz., that of welding bell-and-spigot, or sleeve-type, joints, and that of welding butt joints. (Types of welded joints are shown in Figure 1). The welding of bell-and-spigot and sleeve-type joints presents little difficulty, because the weld is made in the down-hand position on the shelf which results from the juncture of the coupling or the end of the lower joint with the wall of the upper joint. The butt joint, on the other hand, is a distinctly new position. Most competent welders have been trained to weld in three positions, viz., flat, overhead, and vertical.

Welding butt-joint casing calls for a fourth position which, for lack of any generally accepted name, is here called the "horizontal" position. The problem in this position is simply that of keeping the puddle in position. Owing to gravity, it tends to run down the side of the lower joint, and it is the problem of the welder in this position so to handle his electrode that he is able to keep the puddle in position in spite of gravity. This position is probably no more difficult than the overhead position. It is, however, a different position, and the actual knack of handling it has to be gained by practice of the welder. When a new man first starts the practice, he often builds a rather high ridge of weld metal around the upper end of the lower joint, while the metal is rivering around the lower end of the upper joint. Our experience has shown consistently that competent welders in other techniques are able to overcome this within two days of practice or less.

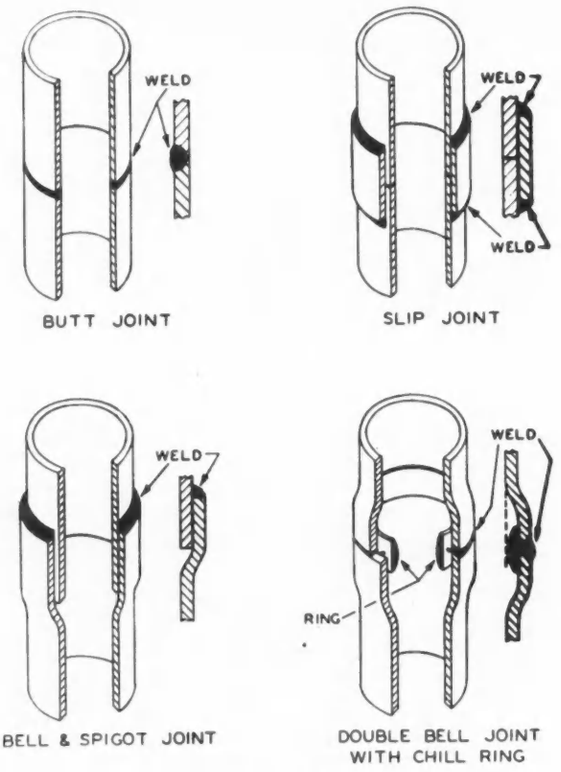

FIGURE 1
Joints for Casing Welding

As a part of their training, the welders should be required to cut coupons from the weld for tensile tests. The coupons cut from butt joints will, if a sufficiently high tensile electrode is used, be able to show a weld which will cause the failure to take place in the stock of the pipe. However, in the case of coupons cut from bell-and-spigot joints it is usually not possible to develop the full strength of the stock of the pipe. The reason for this is obvious, in that the transfer of stresses in this offset weld throws the weld at a considerable disadvantage.

Limitations on Electrodes

In the welding of these two types of joints the 3/16-inch electrodes are the largest that we have been able to use successfully on butt-joint pipe, and we say this after considerable effort to use larger electrodes. In the case of the bell-and-spigot, or sleeve-type, joint we find that the only limitations as to the size of the electrodes that may be used are: 1, the capacity of the welding generator; and 2, the thickness of the wall of the bell. We can, then, use 5/16-inch eelctrodes, or even 3/8-inch electrodes, on a slip-type joint, if the wall of the bell is at least 5/16-inch or 3/8-inch in thickness. Obviously, if we tried to apply a larger electrode to a 5/16-inch wall, the result would be that part of the electrode would extend out over the edge of the wall, and melt and run down the wall, adding nothing to the weld.

Summarizing, it is seen that welders trained in the welding of casing are necessary to the successful welding of casing. The problem of training welders, however, is not too serious or too difficult if the men are already competent welders in other techniques, and can

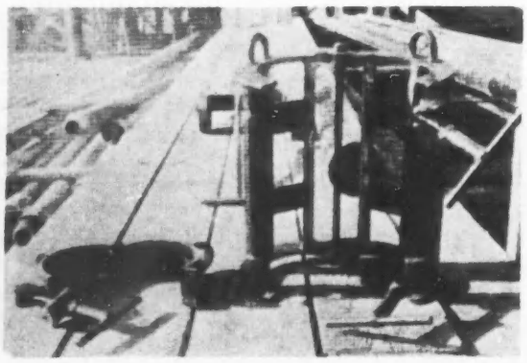

FIGURE 2
Pick-Up and Line-Up Clamps

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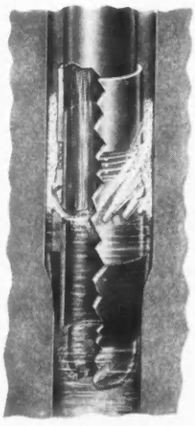

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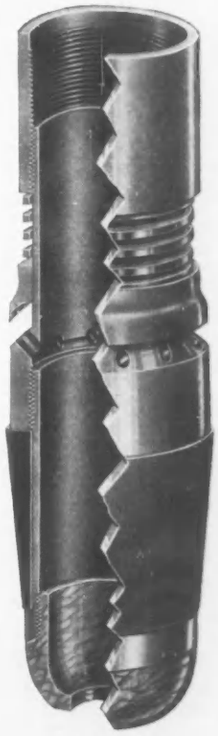

Fig. No. 501

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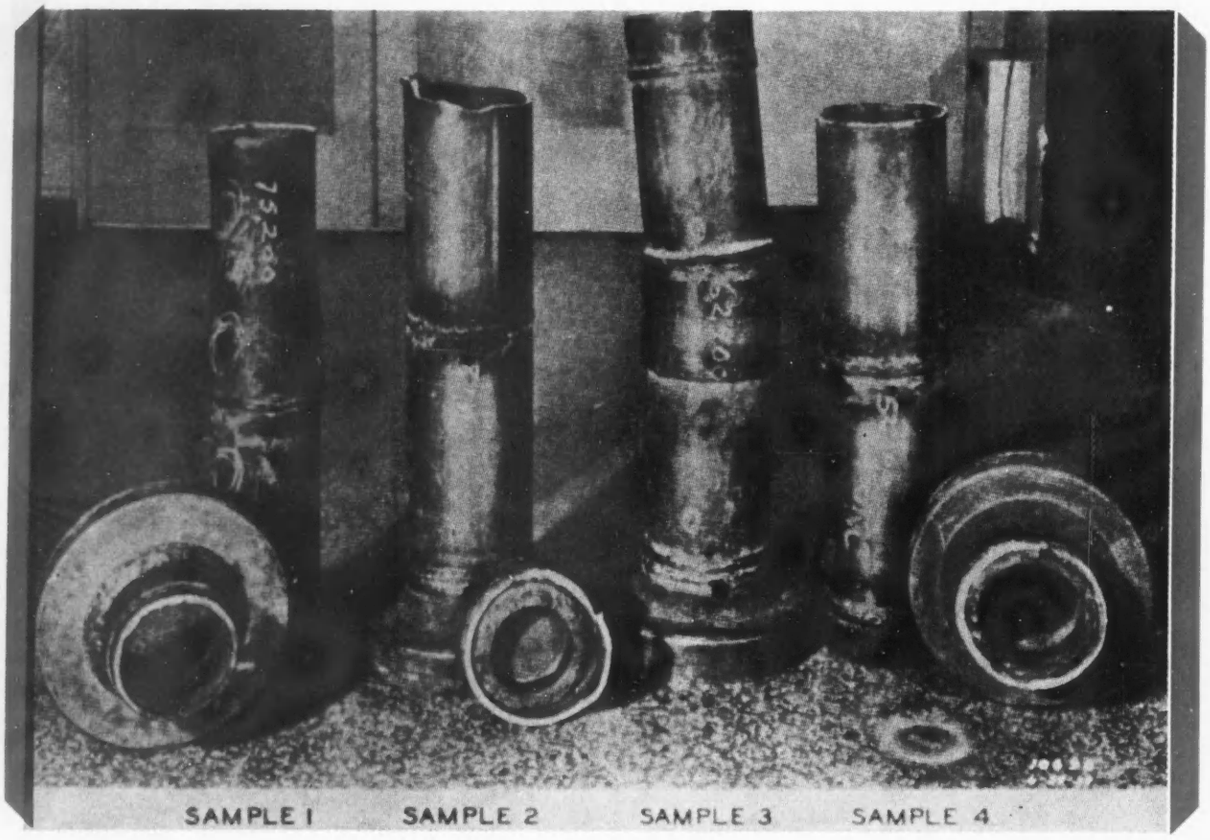


FIGURE 3
Tensile Test Specimens; Test Data Shown in Table 1.

be accomplished in a very short time if care and proper supervision is given to the men in their practice.

The second part of the welding problem, viz., the necessity of having a pipe of a weldable steel, might be considered by some to be really only an extension of the first part, i.e., of obtaining properly trained welders. While we recognize that we can either train welders to weld pipe that is available, or we can insist on the steel makers making available a pipe that our welders can weld, we finmly believe that the latter is the proper course.

There is no question in our minds that grades "C" and "D" casing can be welded. It is, however, a serious question as to whether they could ever be welded as easily or, if they were welded, that the welds would be as satisfactory as if readily weldable steel had been used. We feel justified in turning this part of the problem over to the steel makers, and we are confident they can solve it. Their problem is to furnish pipe which is readily weldable, viz., a steel which has an average carbon content of 0.25 and not more than 0.35 percent If two steel makers present steels which are otherwise acceptable and satisfactory for the welds, it is certain that the one presenting the steel with the lower carbon will more readily find a market for his product. The problem of the steel maker, then, is to furnish pipe which will have as low a carbon content as possible, and in no case a higher carbon than 0.35 percent, and still have such collapse resisting qualities as will make it feasible to be used in deep wells. Pipe is now available on the market which will meet these requirements, and there is little doubt that other pipe will be made available whenever the steel makers really give this their best thought.

The other possibility, i.e., developing a technique, finding an electrode, and training welders to weld grade

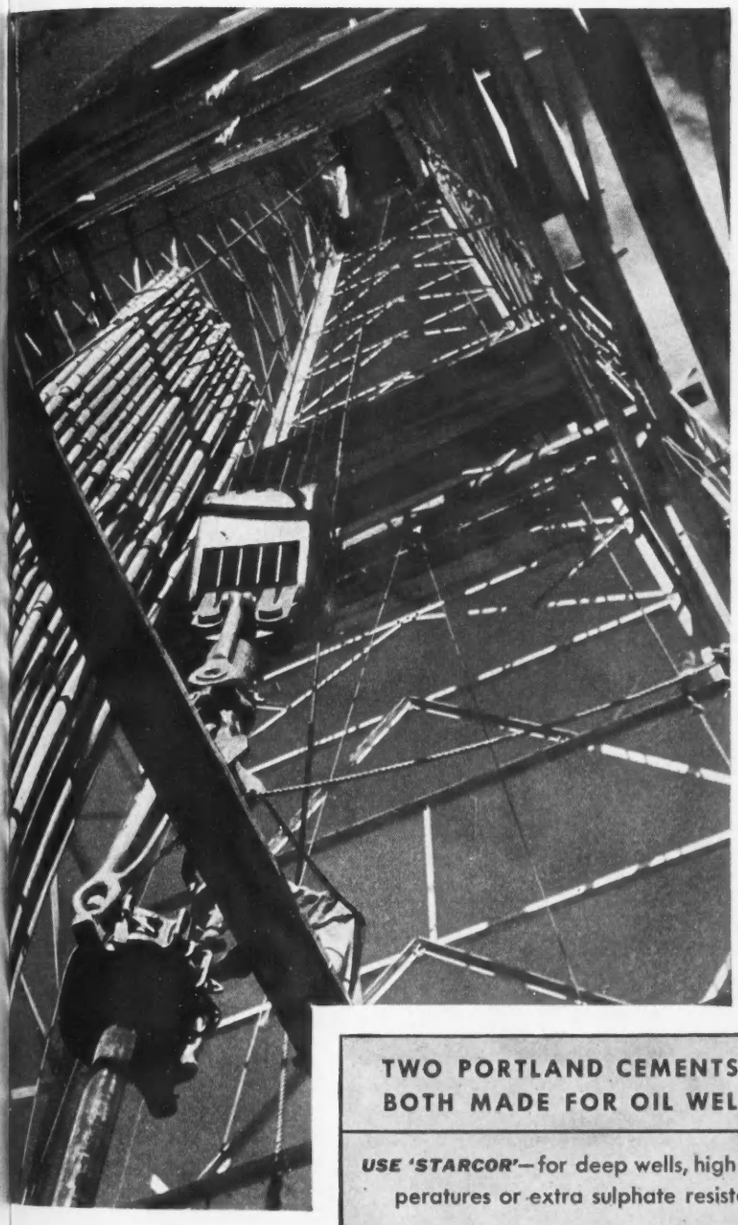
TABLE 1
Results of Full-Joint Pulls of Welded-Joint Casing

SAMPLE NO.:—	1	2	3	4	5	6	7	8	9	10	11
	7-In. 24-Lb. Grade "C" Bell-and-Spigot	8⅝-In. 36-Lb. Butt-Joint	8⅝-In. 36-Lb. Slip-Joint	8⅝-In. 36-Lb. Butt-Joint	8⅝-In. 36-Lb. Slip-Joint	8⅝-In. 36-Lb. Butt-Joint	8⅝-In. 36-Lb. Slip-Joint	7-In. 24-Lb. Grade "C" Bell-and-Spigot	8⅝-In. 36-Lb. Double-Bell-and-Chill-Ring	8⅝-In. 36-Lb. Double-Bell-and-Chill-Ring	8⅝-In. 36-Lb. Slip-Joint
Measured average thickness, in.	0.339	0.4125	0.406	0.410	0.406	0.411	0.413	0.337	0.40	0.40	0.40
pounds pulled when failure occurred, lb.	531,600	871,100	654,900	550,600	790,000	552,200	483,000	523,500	792,500	838,400	608,600
Stress in sample at time of failure, lb. per sq. in.	74,454	81,335	64,395	52,841	77,679	52,691	46,802	72,911	77,925	82,438	59,843
Joint efficiency, per cent	100	100	74.66	100(?)	90.06	61.06	55.06	100	100(?)	94.12	70.40

Joint efficiencies based on strength of electrode, which had an ultimate tensile strength of 85,000 lb. This electrode was used because the manufacturer's minimum guarantee on this casing was 85,000 lbs.

TIME'S MONEY

—IT PAYS TO DRILL OUT IN 36 TO 48 HOURS WITH 'INCOR'



BRIGHT and early on a Tuesday morning, the protection string on a Gulf Coast well was cemented with 500 sacks of 'Incor'. Wednesday afternoon, less than 36 hours later, they drilled through. Cuttings came out hard as flint. No three-day wait for cement to harden. You can drill out days sooner with 'Incor'. And time means money.

'Incor'* makes a velvet-smooth, free-flowing slurry. Easy on the pumps, even at 15 or 16 lbs. High gel strength keeps out mud. That means a stronger, denser, longer-life shut-off.

'Starcor' has the same properties—plus timed setting action for deep wells and high temperatures. Inbuilt safety factor allows ample time to put cement in place. And 'Starcor'* also gives extra protection where sulphate waters are active. Your nearby dealer can supply you, promptly.

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USE 'STARCOR'—for deep wells, high temperatures or extra sulphate resistance.

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"C" and "D" pipe with their high carbon, is not being given any consideration.

The Floor Problem

The problem of acquiring the necessary equipment for the running of welded casing and the training of drilling crews in this operation is here called the "floor problem."

Considering the problem under the first of these two heads, it is, of course, necessary to acquire equipment to facilitate the running of welded casing. The practice is still sufficiently young that there is not on the market complete equipment for this purpose, and it is necessary for that reason for the operator to devise certain pieces of equipment that will serve his purpose.

In the running of butt-welded casing, the first problem is to pick up the single joint from the walk and bring it into the derrick. In running threaded and coupled casing this is accomplished simply by putting a slip noose under the coupling. This, however, is not considered safe, even when manila rope is used, in the case of plain end casing. For that reason it was necessary to devise something to take hold of the single joint of casing and pick it up, and in Figure 2 will be seen what we call our "pick-up clamp." It is hinged in the middle, and is tightened by means of a threaded toggle. Two grooves are cut around the inner surface of this pick-up clamp and filled with babbitt; and we believe that, when the clamp is tightened up, a better friction hold is obtained with the soft babbitt than with the bare steel.

After the single length of butt-joint pipe has been picked up, it is necessary to align it very accurately. This we do by means of our line-up clamp, which is shown in Figure 2.

Electric Hammers Worthwhile

We find that it is well worthwhile to supply crews with electric hammers, which are driven by auxiliary generators on the welding generators. These hammers are powered by a 110-volt circuit.

In the handling of bell-and-spigot, or slip-joint, casing, it is not feasible to line up the casing by means of our particular type of line-up clamp; so we accomplish this in a different manner. We use a Y-shaped device attached to the tubing board. This device is counterweighted so that it rotates back out of the way except when actually held down in position by the weight of the man on the stabbing board.

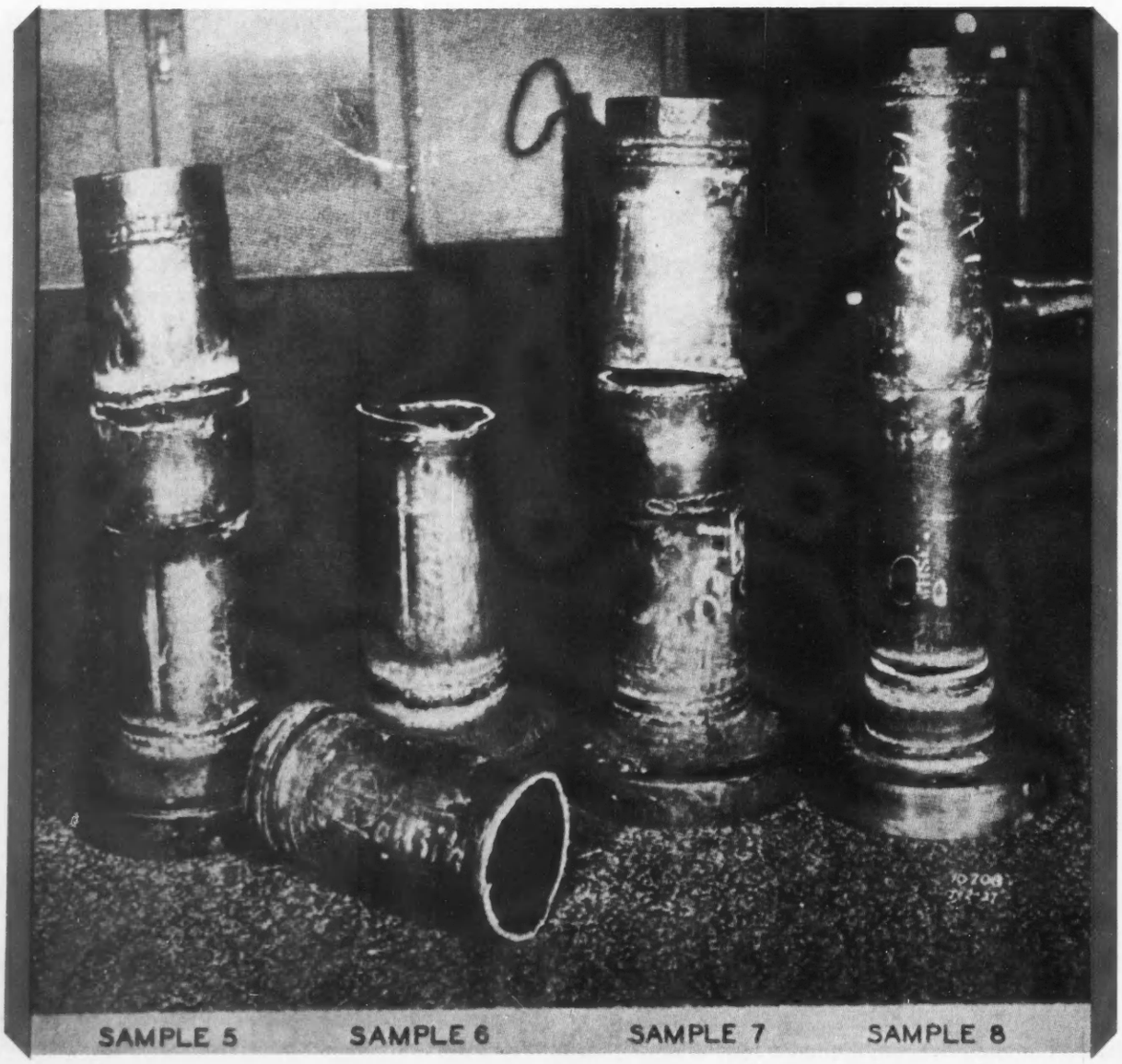

FIGURE 4
Tensile Test Specimens; Test Data Shown in Table 1.

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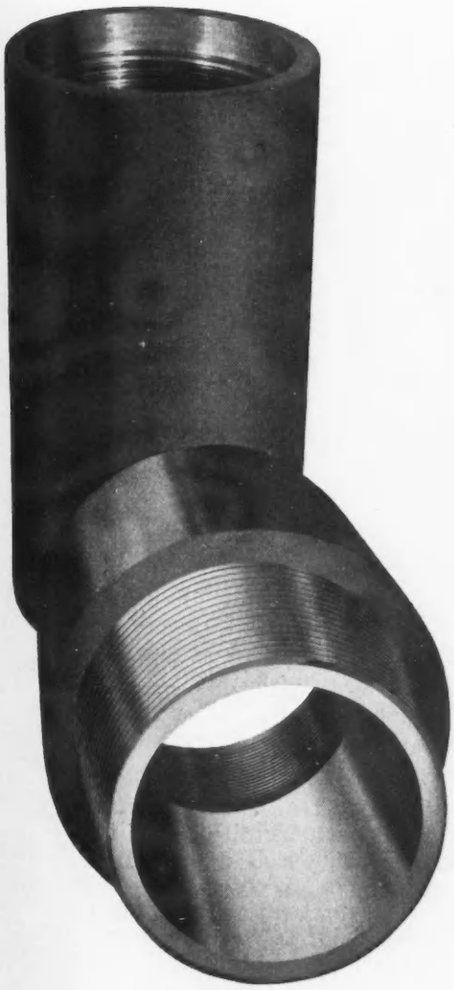

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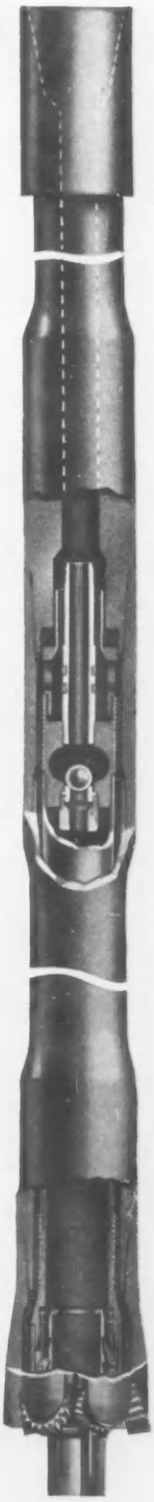

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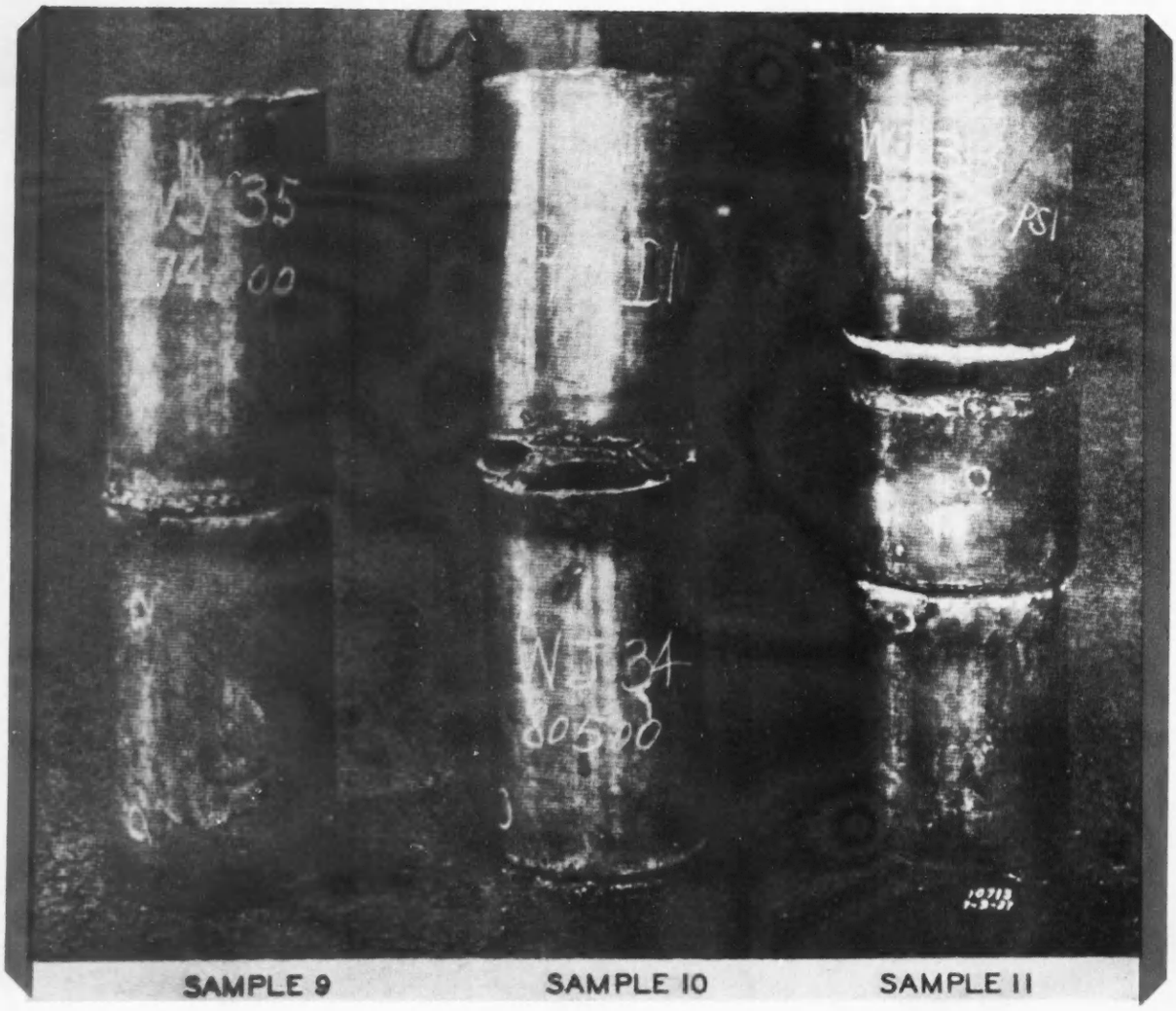

FIGURE 5
Tensile Test Specimens; Test Data Shown in Table 1

In using this device it is necessary to spend possibly 15 to 20 minutes in lining up the first joint of pipe and clamping the "Y" by means of the bolts on the stabbing board. From that time on, it is necessary only to bring the upper end of each joint of pipe into contact with the two arms of the fork of the "Y," and it will be automatically lined up.

Use Slip-Type Elevator

When running butt-welded pipe, it is necessary to use a slip-type elevator. We have also used this type of elevator when running belled-end pipe, but it would probably be possible to develop an elevator for the belled-end pipe which would work on the same principle as a regular collar elevator. If this could be done successfully, there would be some advantage owing to the fact that the slip-type elevator is always somewhat slower in handling than the type of elevator which takes hold under the coupling. We have also found it desirable to use a floor spider of the type in which the slips set themselves automatically and simultaneously by the release of a lever from which they are suspended.

Regarding the danger in running plain-end pipe, our experience today is that we have not dropped or nearly dropped a single joint in the running of quite a number of strings of butt-welded pipe. We do, however, think it worthwhile to take the extra precaution of using the automatic floor spider to back up the slip-type elevators. There is a good chance that, if the pipe were to slip through the elevators due to the pipe hitting a bridge, or for some other reason, it could be caught by the man holding down the lever from which the slips of the floor spider are suspended.

Regular and continuous attention is given to the condition of the teeth in the slips of elevators and spiders to see that these are sharpened frequently and that this equipment is well oiled and kept in perfect working condition at all times.

Float Shoe Size

One problem which will have to be met, as this welding of casing proceeds, is that of adjusting the size of the float shoe to the new outside diameter obtained by butt-welding casing. Usually it is desired to have the float shoe just slightly in excess of the outside diameter of the coupling in threaded and coupled pipe. In the case of butt-welded pipe, however, the outside diameter of the pipe in the weld will be only 3/16-inch (approximately) greater than the outside diameter of the pipe. Inasmuch as one of the arguments in favor of butt-welded pipe is that it is possible to obtain closer clearance between pipe strings, it will probably be necessary in the near future to take up with manufac-

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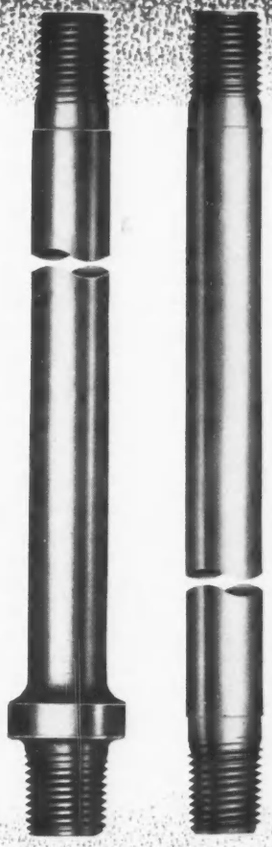

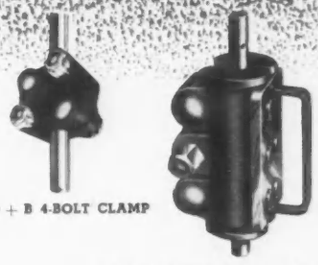

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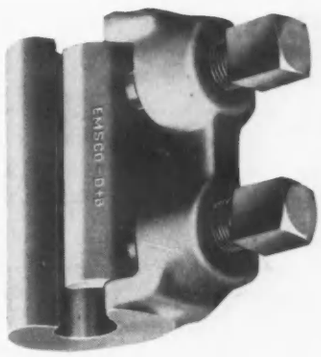

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TABLE 2
Chemical Analysis of Pipe in Fig. 3, 4, and 5

Sample	Carbon (Percent)	Manganese (Percent)
1	0.22	1.16
2	0.32	1.65
3	0.30	1.63
4	0.34	1.66
5	0.30	1.63
6	0.32	1.63
7	0.30	1.64
8	0.22	1.16
9 10 11	0.32	1.63

turers of float shoes the necessity for a float shoe of lesser diameter, to be used on butt-welded pipe. To the best of my knowledge, this has not been done or, at least, nothing has resulted from it if it has been taken up.

We have found it necessary to furnish a dark shade of goggles, known as "calobar," to all men who work on the derrick floor or close to it during a job of casing welding. The welders even like to wear these under their helmets, because it is occasionally necessary for them to raise their helmets in order to change electrodes while some of the other welders are still welding. These goggles, of course, will not protect against the arc if the wearer looks steadily at it, but they do enable a man who is careful to keep his face turned from the arc from suffering any injury due to reflected rays.

Training the Men

The other side to the floor problem is the matter of training the men. The drilling crews who have never before run welded pipe present a major obstacle to progress in the beginning of a casing-welding program. The routine in the welding of casing being totally different from that used in the running of threaded and coupled pipe, the men find themselves more or less at a loss what to do. The two floor men who usually handle the tongs and spinning rope in running threaded and coupled pipe have nothing to do unless they are assigned jobs. Because of this it seems reasonable to turn over to them the job of cleaning the welds. As has already been pointed out, this is done now with electric hammers. Besides cleaning the weld, about the only other job the floor men have to do is to put on the pick-up clamp and line up the pipe by means of the line-up clamps.

It is necessary fully to impress upon the drilling crews, or upon any others who may be responsible, the necessity for thoroughly fireproofing the job before in the hole is in proper condition, there will be no leakage and there must be no accumulations of oil, either in the cellar or on the ground around the rig or in the slush pits. If there is such oil, it is necessary that it be removed by whatever means may be required. If the mud in the hole is in proper condition, there will be no leakage of gas from the hole. In dry weather it is particularly important to clean out from under the rig, where there is often an accumulation of paper, shavings, chips, waste, etc. In any event, the duty must be definitely assigned to someone to make a thorough inspection before welding begins.

Test Results

The next problem to consider is the joint problem. We do not claim to have established definitely the best type of joint, but we have conducted an extensive testing program, and are in possession of data which should be of interest. It was felt that possibly the most important single test that could be made on the welded joint was the full joint pull-out. A number of these tests, therefore, have been made in several different kinds of joints. The joints of casing which we shall discuss in this section have been welded by The Carter Oil Company's welders (see Table 1 and Figures 3, 4, and 5).

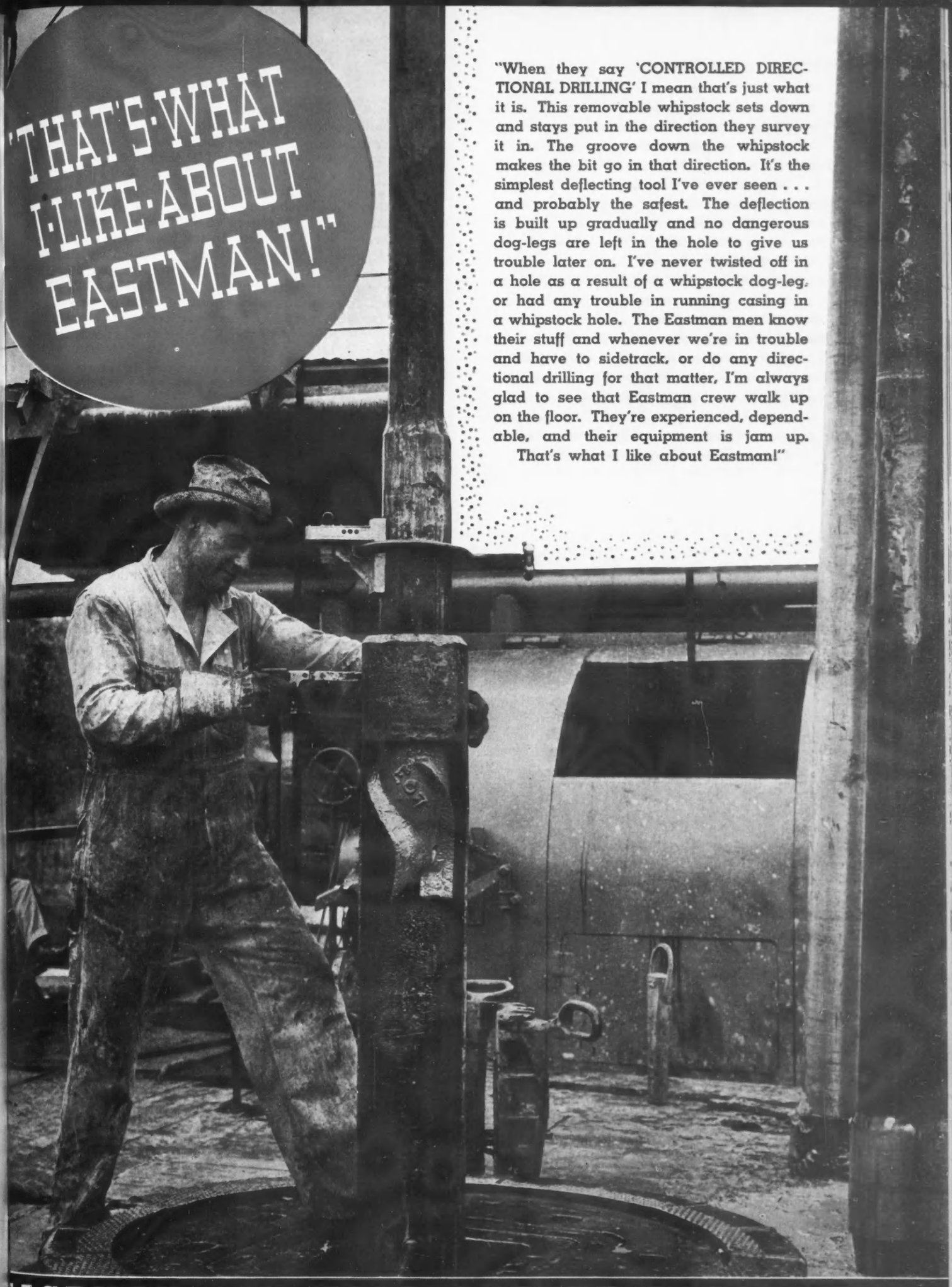
The joint efficiencies are calculated as the stress developed in the pipe at the time of failure, divided by the cross-section of the pipe wall, times the ultimate tensile strength of the pipe or of the electrode, whichever is the lesser. The determination of joint efficiencies involves a question as to what factors should be used; therefore, the data are presented sufficiently complete that any who may wish to do so may use some other method of calculation. The problem is simply this: It is, of course, desirable in welding casing to use the lowest tensile electrode possible, in order to have as ductile a weld as possible. It seems reasonable, therefore, to select an electrode with an ultimate tensile strength equivalent to the minimum ultimate tensile strength guaranteed in the casing by its manufacturer. Thus, if buying a grade of casing in which the manufacturer guaranteed a minimum ultimate strength of 75,000 pounds per square inch, we would endeavor to use an electrode of the same strength. This because we know that as we go up the scale of tensile strengths in electrodes, we tend to lose ductility in the weld. If the casing actually has an ultimate tensile strength of 90,000 pounds per square inch, any weld that will be made in this casing may be expected to fail if the electrode has a strength of only 75,000 pounds per square inch. The question will naturally arise, then, why not use an electrode of an ultimate strength of 90,000 pounds per square inch? The answer is the practical one, that in production work it does not seem feasible to determine the actual physical properties of every consignment of pipe. It is to avoid this that the Institute has set up a system of grading pipe in which every grade has certain minimum physical characteristics. In the field, therefore, if we buy pipe guaranteed to have a minimum tensile strength of 75,000 pounds per square inch, all the purchaser is likely to know is that the pipe does have an ultimate tensile strength of at least 75,000 pounds per square inch.

Minimum Physical Characteristics

One good argument against using the manufacturer's minimum guaranteed tensile strength in computing joint efficiencies is that, in the tests made on threaded and coupled casing to determine the joint efficiencies, it is said that the actual average strength of the casing was used instead of the manufacturer's minimum. Therefore, for the sake of comparison it is more uniform to use some such average figure than the manufacturer's minimum. However, this is felt to be so only for the sake of making this comparison, and it will quickly be seen by any making this comparison that the average welded joint is so much more efficient than the average threaded and coupled joint that there is nothing to be

TABLE 3
Physical Characteristics of Pipe in Fig. 3, 4, and 5

Sample No.	Yield Strength (Lb. Per Sq. In.)	Ultimate Tensile Strength (Lb. Per Sq. In.)	Elongation in 2 In. (Per Cent)
1	69,500	80,000	28.6
2	98,000	110,000	23.0
3	94,000	105,900	25.0
4	103,900	113,200	21.0
5	94,000	105,900	25 0
6	102,300	111,000	21.5
7	99,300	118,200	21.0
8	67,300	81,250	32.1
9 10 11			



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EASTMAN OIL WELL SURVEY COMPANY

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TABLE 4

Simulated Results of Welding on Cold-worked Steel

Specimen No.	Yield Strength (Lb. Per Sq. In.)	Ultimate Strength (Lb. Per Sq. In.)	Elongation In 2 In. (Per Cent)	What Was Done To Specimen
1	96,500	111,800	22.0	As received
2	98,000	108,100	25.0	As received
3	69,500	105,600	28.0	Heated
4	69,200	101,500	30.0	Heated
5	64,000	101,500	30.0	Heated
6	65,500	103,000	30.0	Heated

gained by harking back continually to such a comparison. Future needs demand the use of a joint efficiency which is based on the same factors as those used in the design of casing strings, viz., the minimum physical characteristics of the steel.

Referring to the data in Table 1, attention is called to the fact that in some cases failure took place in the sample outside of the weld and before the full strength of the pipe had been developed. These failures were chiefly due to eccentric loading which, in turn, was due to improper preparation of the samples. In the case of joints failing outside of the weld, we have tentatively given them 100 percent joint efficiencies, although we are perfectly willing to admit that this is questionable, and on such joints question marks have been placed after the joint efficiencies to call attention to them.

Tables 2 and 3 contain the chemical and physical analyses of the casing shown in Figures 3, 4, and 5.

Attention is called to the fact that in no case does the carbon content exceed 0.34 percent.

Welding and Longer Tubing Strings

In connection with these tests of this particular casing, another phase has been investigated to a slight extent, and the results tabulated in Table 4. The issue is this: There is a trend in the manufacture of tubing for oil well casing at this time to increase the setting depths of this tubing by increasing the yield point in compression by cold working. The question arises, then, as to what effect welding has upon such tubing. For that reason, six coupons were cut from the 8⅝-inch samples above discussed, and the yield point and ultimate tensile strength of two of these were determined without giving them any further treatment. The other four were heated in a band about 1½ inches wide, to a bright red—this band being transverse to the longitudinal axis of the coupon, and approximately equidistant from the two ends. By this heating, we intended to simulate the result of the high temperatures of welding on cold-worked steel. The results are shown in Table 4.

It will be noted that what happened was that the increased yield point due to cold-working was largely neutralized; and that the ultimate tensile strength, while reduced, was reduced only slightly (approximately 6 percent). As would be expected, the percentage of elongation was increased. From this we will be interested in two things: First, the effect that will be had on tensile strength or joint efficiency of such casing when welded, and the answer seems to be that the failure will probably occur in the stock of the pipe immediately adjacent to the weld. Second, we are interested in the question of what will be the effect of welding cold-worked casing upon its setting depth. It is only natural that one should ask what has happened to the increased setting depths accomplished by cold-working if the cold-working has been neutralized by welding. The answer is fairly obvious. In the use of the electric arc to effect the welding, the casing is heated up such a short distance from the weld that the narrow band of low-yield steel immediately adjacent to the weld is not enough to cause collapse to occur at lower pressures. As a matter of fact, two tests have been run on this point by T. M. Jasper,* of the A. O. Smith Corporation, as follows:

"Test in collapse of two pieces of pipe in which the specimens were ten (10) diameters long, and which had in each case a butt-welded joint in the middle. The effect of the joint was to thicken the section at the middle of the collapse specimen about 3/32-inch for about three quarters of an inch in width. The resultant effect of welding on the collapse of the specimen was to increase the value of the collapse over the nominal value to the extent of the following:

"Dimension of Pipe	Normal Value of Collapse Pressure	Actual Value of Collapse Pressure
10¾ in. × 0.310	1,565	1,850
8⅝ in. × 0.410	5,900	6,500

"The important question which was raised, and which these tests answer, is the effect of the heat of welding in the neighborhood of the weld in reducing the collapse strength of the pipe.

"It will be seen from the above tests that the slight increase in thickness at the weld more than offsets the effect of heat which might be considered as a reducing factor."

It may be said, then, that we are not impairing the ability of cold-worked steel to withstand collapse by making the circumferential weld necessary to run the casing.

Results of Tests

The results of this series of tests may be summarized by pointing out that, with the exception of the slip-joint weld, much higher joint efficiencies have been obtained than could be expected from threaded and coupled casing. In the case of the slip-joint weld, the results were discouraging. The reason for this is believed to be that, in running the casing, the two ends of the casing butt together within the threadless coupling and, when the weld is applied and the metal cools, contraction takes place, which builds up a considerable initial stress in the weld. The result is a considerably lower joint efficiency. It has been suggested that this condition could be alleviated by placing some soft material, such as gasket, on top of the end of the lower joint, inside the collar, so that when shrinkage occurs the two ends of the pipe actually could pull together to a slight extent by compressing the gasket material. We have never tried this, but the results undoubtedly would be of interest. It might be expected, offhand, that the same results would be had with bell-and-spigot casing, but our results thus far do not indicate that this is true. Bell-and-spigot casing has thus far shown to yield a very high joint efficiency.

*Personal communication.

To Be Continued in an Early Issue

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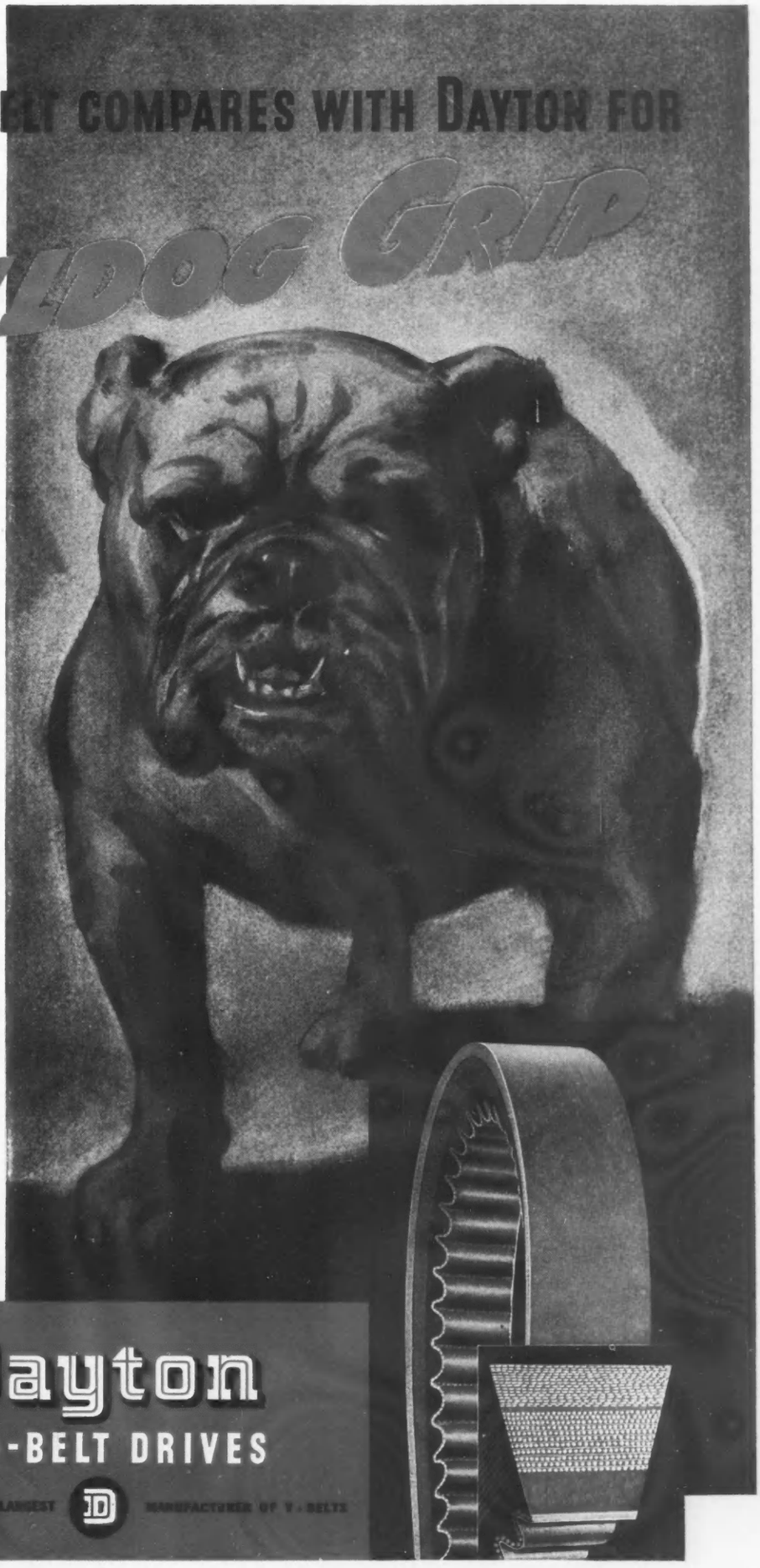

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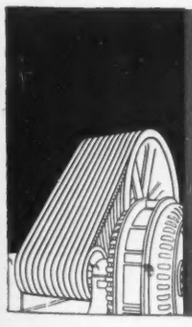

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By M. T. PATE

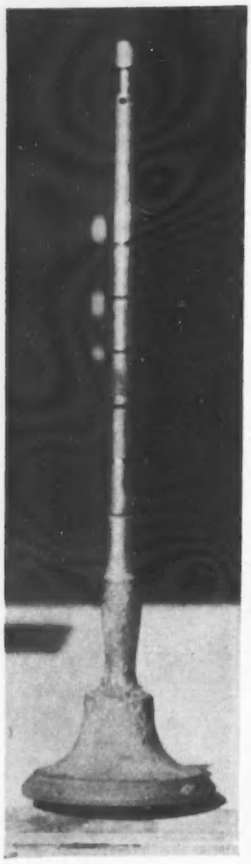


FIGURE 1

Midway in the row of six oil grooves shows the bank of carbon which effectively shuts off all oil from lower end of valve stem and thus causes excessive stem and guide wear.

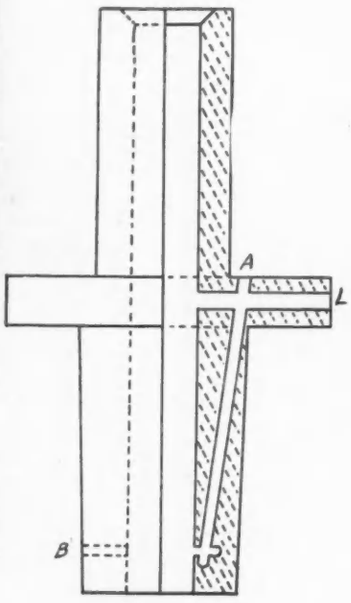


FIGURE 2

L—Original oil bore.
B—Hole to carry oil to base of stem.
A—Lead from original oil line to new feed location.
(Not drawn to scale)

EXCESSIVE wear of valve stems and guides on the exhaust sides of a battery of vertical engines in a main line pump station was a frequent cause of shut-downs and overhaul when otherwise the prime movers and pumps were capable of delivering many more hours of uninterrupted service.

At first ascribed to the inevitable effect of heat on the stems, together with consequent expansion of the metal and thus reduced clearance between stem and guide at the lower end, an attempt to sidestep the trouble directed the working over of the valve stems so as to reduce slightly the diameter of that portion of the stem working in the lower half of the guide.

Instead of bettering conditions, the opposite was found to result from increased clearance, with the valve tending to cant or cock sidewise in the guide and thus to cause improper or delayed seating, with consequent gas erosion of both valve and seat.

Since under engine design the same guides were used for both inlet and exhaust valves, and as the stems for both valves were identical, further study of damaged valves and stems indicated that a change in guide design might better the lubrication, and thus cut down the extent and also more widely distribute wear.

In Figure 1 is shown an exhaust valve, pulled after only 650 operating hours, on which the neck of the stem is badly eroded by outgoing hot gases. The most readily visible damage is undoubtedly due to this gas erosion, but careful micrometer measurements on the stem show that the lower portion of the stem has been worn away as much as 0.008-inch up to the point where a ring of carbon is visible between the third and fourth oil rings cut into the stem. Also, the rings below the stem are plugged with tightly caked and burned carbon, acting in each instance as miniature hones to remove still more metal from the valve guides and to promote the sticking or delayed closing of the valve which has fostered the erosion.

Since the valve stem from the wide ring of carbon to the top of its zone of contact with the guide is smooth, cut to size and unharmed, it is evident that lack of lubrication is to blame for the damage below that point, which corresponds to the recess in the guide intended to serve as oil distribution point.

In the conviction that, as the travel of gases through the clearance between stem and guide was always upward, or toward atmospheric pressure, oil should be fed to the valve stem at a point as near the lower end of the guide as possible, a slanting ⅛-inch hole—shown at "A" in Figure 2—was drilled from the spring table down to a point half an inch from the bottom of the tapered sleeve which formed the force fit in the cylinder head. As this hole intersected the original horizontal oil bore "L," so was a second hole "B" drilled in the lower end of the guide to intersect "A" and given an outlet to the space between stem and guide.

The upper end of the hole "A" was tapped and closed with a countersunk plug, but the inner end of "L" was left open. Valves working in guides so equipped with means for adequate lubrication ran satisfactorily for months where the original design had failed in weeks, and the wear in the guide was found to be much more evenly distributed over the entire length of the broached hole than had been the case with the same type of oiling on the exhaust as had been found satisfactory on the inlet side.

With the small bores as shown in the sketch, there was none of the anticipated carboning up discovered on the subsequent annual overhaul; though, with the plug in the upper end of "A," it was easy to remove the valve spring and run a drill bit into this as a check on carbon formation. That portion of the hole "B" lying across the guide from the end connecting with "A" was found to be carboned up tightly, while the short end intended to carry lubricant remained open and operative.

Since station practice prescribed manual rotation of all valves through an arc of some 120° on each tour of duty, even with but the one outlet for oil at the base of the guide, sufficient oil was distributed all around the stem to minimize wear and, through the maintenance of an oil seal against the slightly raised exhaust pressure, to cut to a negligible amount the travel of these more or less corrosive gases through the stem-guide clearance.

FOUR IMPORTANT EXECUTIVE CHANGES IN PHILLIPS PETROLEUM COMPANY, AS JOHN H. KANE RESIGNS

PROMOTIONS FOR K. S. ADAMS, DON EMERY, R. M. RIGGINS AND ROY PARR ANNOUNCED

FOUR important personnel changes in the executive department of Phillips Petroleum Company were announced last week. The promotions, which included the creation of one new office, are effective January 1, 1938, and followed the resignation of John H. Kane as executive vice president and general counsel. K. S. Adams, formerly treasurer and assistant to the president, was named the new executive vice president. Don Emery, who has been serving as vice president and assistant general counsel, became general counsel. Hereafter the office of executive vice president and general counsel will be separate positions. R. M. Riggins, comptroller, succeeded Adams as treasurer; while Roy Parr, assistant comptroller, took the place of Riggins as comptroller.

Kane's resignation, made after 20 years with the company, was due to the pressure of personal business. He was born on an oil farm in Warren County, Pennsylvania. After graduating from the University of Kansas he practiced general law for a few years. By 1905, he was attorney for independent operators at Bartlesville, and also an independent operator himself. He continued his oil law practice and independent operating activities until the organization of Phillips Petroleum Company in 1917, when he was engaged as general counsel. He became a member of the board of directors in 1918, and a vice president in 1920.

K. S. ADAMS

The new executive vice president, K. S. Adams, also is a graduate of the University of Kansas. His first job in the oil industry was in the warehouse and material departments of Phillips Petroleum Company in the fall of 1919. From 1922 to 1926 he was in the production department of the company. In the latter year, Adams took charge of the field payroll in the accounting section, and later in the same year was made assistant chief clerk of the accounting division. In 1927, Adams was elected assistant secretary, and the following year was also appointed assistant treasurer. He became an assistant to Frank Phillips, the president, in August, 1932. He continued in the latter position when elected treasurer and a member of the board of Directors in April, 1935.

Don Emery, the new general counsel, studied at the University of Oklahoma. He practiced law at McAlester, Oklahoma, until he entered the employ of Phillips Petroleum Company on February 1, 1925. His association with the company commenced in the legal department. By 1926, Emery was in charge of the Texas Division of the legal department, making his headquarters at Amarillo. On January 1, 1937, he was elected vice president and assistant general counsel, and was transferred to the general office at Bartlesville.

R. M. Riggins, a native of Texas, began his business career as bookkeeper. After holding various clerical, traffic and accounting positions in different concerns, he organized a public accounting firm. In 1922, he sold his interest in the accounting company, to become secretary and treasurer of Independent Oil & Gas Company, later becoming director and member of the executive committee. When Phillips Petroleum Company purchased that company in 1930, Riggins was appointed to the position of comptroller, which he held until elected treasurer last week.

STARR THAYER, corrosion engineer for United Gas System, Houston, for the past seven years, has established a general consulting service, but will continue also as consultant for United Gas and affiliated companies. During his service with United Gas System, Thayer has pi-

—Blank & Stoller.

JOHN H. KANE

DON EMERY

—Griggs Studio

R. M. RIGGINS

oneered many of the developments in pipe line corrosion protection, most of which now are used generally throughout the industry. His department developed the practical application of cathodic protection on pipe lines, as well as doing considerable work to protective coatings, particularly as to their application. Thayer often has been a contributor to the corrosion meetings of the A.P.I., the A.G.A. and the Bureau of Standards soil conference. His office will be located in the Rusk Building, Houston.

J. A. McCUTCHEON, district exploration engineer for Shell Petroleum Corporation in the Texas Panhandle, recently resigned to join the British American Oil Company, Tulsa, Oklahoma.

JOSEPH E. MORERO, chief geologist for Skelly Oil Company, Tulsa, Oklahoma, recently left for Santa Domingo to make first check of the 500,000-acre concession his company, together with other parties, recently acquired from the government in Haiti.

JAMES FOLEY BECOMES CHIEF ENGINEER CALIFORNIA-TEXAS

JAMES FOLEY, formerly division engineer for The Texas Company in the Rocky Mountain region will be transferred to the Bahrein Islands in the Persian Gulf soon. His duties there will be chief engineer for for California-Texas Oil Company, Ltd.

After receiving his degree in petroleum engineering from Texas A. and M. College in 1932, Foley became connected with The Texas Company, Houston, starting as division engineer with headquarters at Denver, Colorado. About two months ago, he was transferred to California-Texas Oil Company, Ltd., New York City, and since, has been inspecting all principal oil fields in the West and South gathering data for his new duties assigned to him.

JAMES FOLEY

BYRON B. BOATRIGHT JOINS PARKER, FORAN AND KNODE

BYRON B. BOATRIGHT has been admitted to the firm of Parker, Foran and Knode, consulting petroleum engineers. The firm now is known as Parker, Foran, Knode and Boatright, and the junior member will open a branch office in Houston about January 1. Boatright recently has been head of the Petroleum Engineering Department of the Colorado School of Mines, and has left that work to enter the consulting field.

He received his Doctor's Degree in petroleum engineering from the University

BYRON B. BOATRIGHT

of Colorado in 1936, having received his Bachelor of Science degree in 1922. In 1923 he did field work for Midwest Refining Company, and during 1925 and 1926, he was with the United States Geological Survey in Colorado, leaving that work late in the year to become district petroleum engineer in the Panhandle for Marland Oil Company, where he remained until 1928.

He later resumed his professorial duties at the Colorado School of Mines, and last year he was in Texas much of the time making special studies of high pressure gas wells in Southwest Texas and other sections of the state.

R. J. PHILLIPPE, assistant to J. F. Haely in conducting an investigation in the Burrton field of Reno County in connection with the Kansas Corporation Commission, has been transferred to the Hugoton gas field of western Kansas as proration engineer. The announcement was made by E. G. Dahlgren, director of the conservation division of the commission. Phillippe will work under J. H. Page, in charge of the natural gas department of the commission.

NELSON ALDRICH ROCKEFELLER, son of John D. Rockefeller Jr., who had suffered from an acute bronchitis attack, is reported much improved. Rockefeller, accompanied by his brother Winthrop, was stricken with influenza while deer hunting on the Armstrong ranch, near Kingsville, Texas.

DAN MORAN, president of Continental Oil Company, Ponca City, Oklahoma, returned to his desk having spent a few days in Houston.

R. L. MITCHELL, Empire Oil Company, Tulsa, Oklahoma, has been promoted to superintendent of the company's Konawa gasoline plant, succeeding P. J. Phillips, who resigned to join the faculty of Oklahoma A. and M. College.

RALPH E. DAMP, suprintendent for Carter Oil Company, Tulsa, has been transferred from Ponca City, Oklahoma, to southern Illinois.

I. O. CLARK JR., Royal Oil & Gas Company, Pittsburgh, Pennsylvania, was recently visiting in Houston.

LESLIE A. JOHNSTON, a graduate of the University of Tulsa and formerly with Sinclair Prairie Oil Company, has joined the geological staff of Sunray Oil Company.

ALLEN WILLIAMS has become associated with Turman Oil Company as division geologist in the concern's Houston office.

W. K. DOWTIN, Oklahoma City, and **SAM HOGAN,** Wichita, are in charge of a new production office of Transwestern Oil Company which was opened in Hutchinson, Kansas, last week.

FRANK TRAVERS, South Basin Oil Company, has been selected as president of the California Petroleum Safety Board, recently formed through efforts of the Oil Producers Agency of California.

RICHARD (DICK) SHORT, Navarro Oil Company geologist, is now stationed at Alice.

GEORGE F. NOVAK, engineer for Sam Katz and associates, independent producers in Mexico, is in the United States on a business trip.

DIED:

MICHAEL RUGH HAYMAKER, 92, independent oil operator who was associated with activities that led to the formation of Sun Oil Company, died in San Antonio, November 29. A native of Murrysville, Pa., Haymaker figured in construction of one of the country's first natural gas pipe lines, which served Pittsburgh. He also operated in Jack County many years before moving to San Antonio eight years ago. The story told of Haymaker's career goes back to his beginning with a brother to drill in the Murrysville area in 1878. The well blew out a gasser. Lacking money for continued development, Haymaker interested Chicago capital. The Chicago interests appeared not to have pursued the project, at first, whereupon Joseph Newton Pew and a man named Emerson came on the scene and got a franchise to pipe gas to Pittsburgh. Pew and associates developed surrounding property. Meanwhile the gas line was built, Haymaker disposing of his remaining interests. Pew and associates carried on and later went into Ohio, forming Sun Oil Company.

DONALD B. COLLINS ELECTED CHAIRMAN OF GULF COAST CHAPTER OF THE AMERICAN PETROLEUM INSTITUTE

E. P. HAYES NEW FIRST VICE CHAIRMAN; CARL HICKMAN IS SECRETARY-TREASURER

MEMBERS of the Gulf Coast Chapter of the American Petroleum Institute, Division of Production, on November 29 elected Donald B. Collins, Shell Petroleum Corporation, chairman for the coming year. He succeeds Hu M. Harris, of Humble Oil & Refining Company. E. P. Hayes, The Texas Company, was named first vice chairman, and Warren L. Baker, The OIL WEEKLY, became second vice chairman. Carl Hickman, of Dewey T. Ross Engineering Corporation, was reappointed secretary-treasurer.

Twelve members were elected to the board of directors. The following were named for a one-year term: C. E. Reistle, Jr., Humble Oil & Refining Company; E. P. Hubbard, Gulf Oil Corporation; Hu M. Harris, Humble Oil & Refining Company; Harry L. Edwards, Edwards Drilling Company; Neil Williams, Oil & Gas Journal; and C. A. Russell, Pan American Production Company. Following are those selected for a two-year term: T. H. Andrews, Stanolind Oil & Gas Company; Arthur G. Levy, Crown Central Petroleum Corporation; Chase E. Sutton, The Pure Oil Company; Gordon Richmond, Hughes Tool Company; Gage Lund, Standard Oil Company of Texas; and Rex Hamaker, Reed Roller Bit Company.

The new chairman of the Gulf Coast Chapter graduated from the College of Mining (Petroleum Engineering) at the University of California in 1920, following service in the World War. Upon graduation he worked as petroleum engineer for Ford, Bacon & Davis, and for J. H. G. Wolfe, a consulting engineer. He entered the employ of Shell Oil Company in April, 1923, and worked in many capacities in that organization. He was transferred to Shell Petroleum Corporation as production manager at Houston, in 1934, which position he still holds.

The new vice chairman, E. P. Hayes, took his degree of mechanical engineering at the Case School of Applied Science. His first connection with the oil business was with Henry L. Doherty interests at Bartlesville, which was terminated by service in the World War. Hayes did not reenter the oil business again until 1925, when he joined the Bureau of Mines at Fort Worth, and was assigned to the helium plant. The year 1930 found him doing potash core drill work for the Bureau in New Mexico. Later he was with the Oil & Gas Division of the Bureau of Mines at both Bartlesville and Dallas, during which time he did considerable work in the East Texas and Oklahoma City fields. He became associated with The Texas Company in 1933, where he is now assistant to William V. Vietti in the engineering and production departments.

J. BOYD BEST, geologist for Mills Bennett Production Company, Houston, was the principal speaker at the Houston Geological Society's regular weekly meeting, December 2 at the Texas State Hotel. His subject was "The Geology of the Lopez Oil Field in Webb and Duvall Counties."

T. S. LOFFLAND, independent operator of Tulsa, Oklahoma, was a recent Houston visitor. He is drilling a wildcat test in the South Jennings area of coastal Louisiana.

C. E. MILLS, geologist for Ohio Oil Company, Houston, has been transferred to Wichita Falls, where the company is rounding out an organization to check operations in the fast-growing K-M-A field.

J. H. WALKER, geologist for Sunray Oil Company, Tulsa, has been transferred from Rotan, Texas, to Wichita Falls, following the entry of the company into the K-M-A field as a large lease owner.

ALEX F. SMITH, well-known Shreveport attorney, has joined the legal staff of Gulf Refining Company of Louisiana, with headquarters in Shreveport.

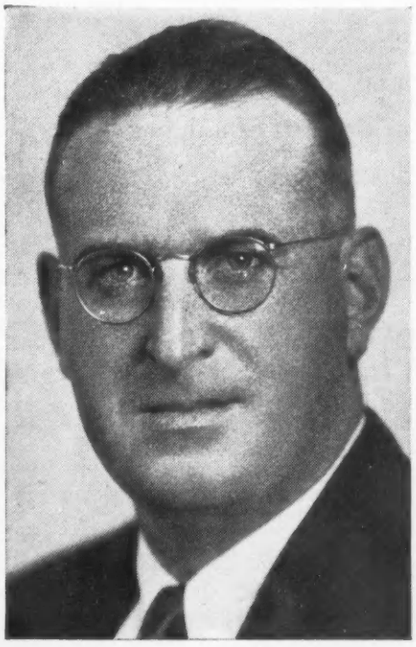
H. H. FARNHAM, colloidal chemist and mud engineer, Baroid Sales Company, Houston, addressed the December meeting of the Shreveport Geological Society on "New Developments in Drilling Mud Evaluation."

A. E. GETZENDANER, chairman of the Oil Field Nomenclature Committee of the South Texas Geological Society, and of Corpus Christi, announced the name of the newly discovered Caldwell County field to be "Lost Mule."

O. J. MORRISON and **EVERETT HUGHES,** both of Charleston, West Virginia, and **C. W. STARCHER** and **S. G. STARCHER,** of Ripley, West Virginia, have organized Glenville Gas Production Company with headquarters at Charleston. The firm is capitalized at $20,000.

FRANK R. WEBSTER, Calgary, was reelected president of Highwood-Sarcee Oils, Ltd., when shareholders of the Alberta producing company held their annual meeting at Calgary last week. R. G. Straker, Calgary, was named managing director, and directors are Eric L. Harvie, Clarence E. Snyder, P. J. Timms, H. H. Bradburn and William A. Ackland, all of Calgary, and G. E. Doubleday, of Vancouver.

New Officers Gulf Coast Chapter of American Petroleum Institute

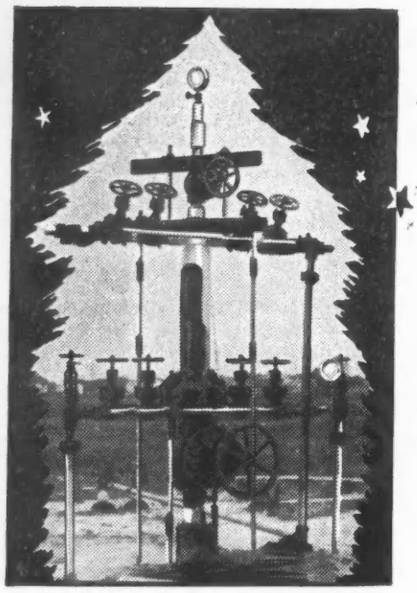


DONALD B. COLLINS

—Wayne Rector Photo

E. P. HAYES

CARL HICKMAN



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Gains More Stability

Firming of gasoline prices removes greatest weakness and rigid production control helps

ADDITIONAL stability came into the industry's market situation last week, as gasoline prices continued largely unchanged for the second consecutive week, while the crude oil market also remained firm.

On a few grades and in a few districts, gasoline tank car prices last week sagged somewhat further, but for the market as a whole, the prices were largely unchanged.

Outlook Better

Since the gasoline market also had proved resistant in the preceding week, following a long and steady decline of prices, the whole market situation assumed a brighter hue.

For the weakness of the gasoline market in the past few months has constituted the principal cause for anxiety in the oil industry.

Whether or not the gasoline market will continue steady at the present price levels remains to be seen. But hopefulness regarding the future of the gasoline market appears to be justified, in view of the unusually effective control of crude oil production that now prevails.

Crude Control Strict

No fault can be found with recent and prospective trends of crude oil production. The output of crude oil in November was not merely within market requirement, but actually short of the demand. From November 1 to November 20, approximately 3,000,000 barrels of crude oil were withdrawn from storage, as the total on hand declined within that period to 304,324,000 barrels. During the rest of November, an additional decrease of storage probably occurred.

For December, similar effective control of crude oil production is indicated, in view of the strict allowables that have been promulgated by the officials of the leading producing states. Several of the states have adopted for December allowables that are actually under the indicated market demand, as forecast by the Bureau of Mines. Consequently, it is indicated that in December, as in November, a substantial net withdrawal from crude oil storage will occur.

Statistics Favorable

By virtue of restraint at the wells and also at the refineries, recent statistics of the industry are quite satisfactory.

In the week ended November 27, crude oil production was down sharply to 3,425,800 barrels daily, which was 13.8 percent more than in the corresponding week of last year.

Possibly due in part to the stricter control of crude oil production, the operations at the refineries also have been cut back. In the week ended November 27, crude runs to stills averaged 3,325,000 barrels daily, a decline of 40,000 barrels from the previous week. At the new level, the refinery operations were 10.1 percent larger than in the corresponding week last year.

These increases over a year ago in crude oil production and in refinery operations are fairly well justified by the fact that petroleum demand is running similarly higher this year than last year. The total demand for petroleum in 1937 has been approximately 10 percent greater than in 1936.

Inventories Moderate

The markets of the oil industry currently are being stabilized not only by the effective control of wells and refineries, but also by the fact that inventories, with the exception of gasoline stocks, are moderate.

The crude oil in storage November 20, totaling 304,324,000 barrels, was only 5.1 percent more than that held one year previously.

In view of the above mentioned increase that has occurred in petroleum demand, the present crude oil stocks are somewhat smaller than those on hand a year ago in terms of days' supply.

The inventories of fuel oil are similarly small in relation to the existing market demand. In the week ended November 27, the stocks of fuel oil were increased about one-half million barrels, or to a total of 121,616,000 barrels. At that level, the fuel oil stocks were 8.6 percent greater than they had been one year previously. But the demand for fuel oil has been running this year around 15 percent greater than last year. Consequently, the present stocks of fuel oil still are comparatively small.

Fuel Oil Raises Problem

While this situation regarding fuel oil stocks is conducive to strong markets and good prices for fuel oil, the net advantage for the industry is doubtful. For the limited supplies of fuel oil naturally tend to stimulate output of fuel oil at the refineries. And the increased refinery activity, in turn, has the effect of increasing gasoline production also. And such increased gasoline production is a circumstance that the industry particularly wants to avoid. For the gasoline stocks already are too great, and it is desirable to hold down further additions to those stocks as much as possible.

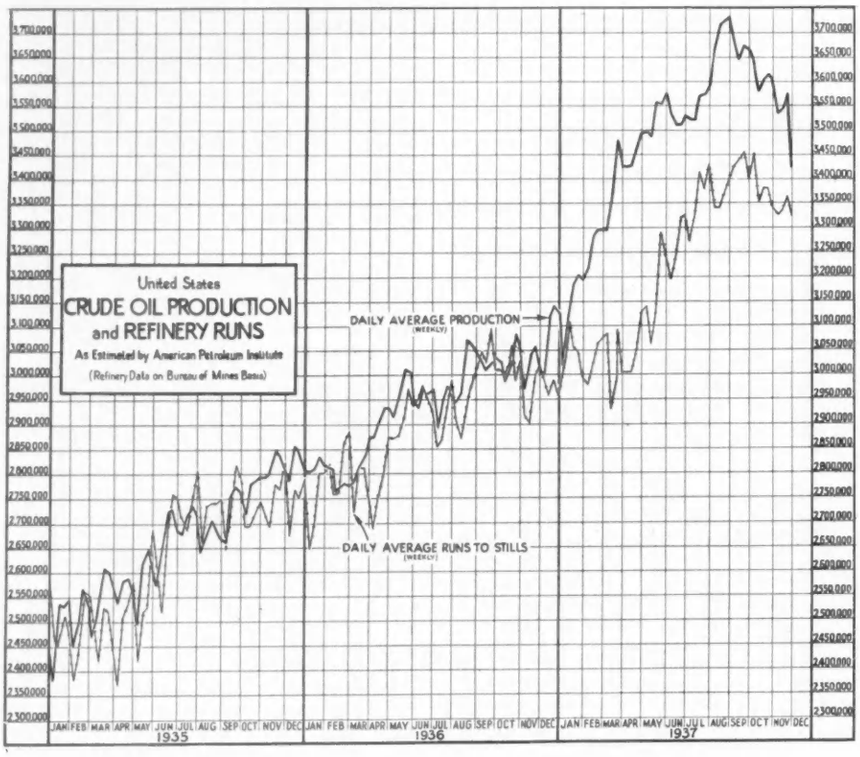
Although the industry is combating the hazard of unduly expanding gasoline stocks, by reducing the yield of gasoline per barrel of crude oil at the refineries, this situation probably will

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports.

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 27	3,431,300	3,060,000	293,587,000	*83,538,000	96,591,000
April 24	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	3,425,000	308,250,000	70,872,000	108,209,000
August	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 25	3,666,300	*3,455,000	307,974,000	65,620,000	116,472,000
October 2	3,647,450	3,400,000	309,036,000	65,266,000	117,076,000
October 30	3,602,950	3,345,000	307,140,000	66,836,000	121,070,000
November 6	3,533,150	3,325,000	307,224,000	67,271,000	120,925,000
November 13	3,541,450	3,335,000	305,608,000	67,035,000	121,012,000
November 20	3,573,850	3,365,000	304,324,000	67,661,000	121,191,000
November 27, 1937	3,425,800	3,325,000	.....	68,544,000	121,616,000
November 28, 1936	3,010,650	3,020,000	†289,454,000	57,448,000	112,025,000
Change in past year	+13.8%	+10.1%	+5.1%	+19.4%	+8.6%

* All time peak.
† Stocks November 21, 1936.



keep the gasoline market in a state of unsteadiness throughout the next several months, when weather will be cold and the demand for fuel oil will be large.

Gasoline Stocks Large

Despite the fact that the gasoline market has become steadier in the past two weeks, the gasoline situation still is a cause for serious concern. The gasoline stocks are considerably higher than market demand justifies, and the fuel oil situation perhaps will make it impossible to fully correct the gasoline inventories.

Last spring, in the week ended March 27, gasoline stocks in the United States reached an all-time peak of 83,538,000 barrels. Such a high level of gasoline stocks was not fully justified. And it is indicated now that the industry may have difficulty in preventing the gasoline stocks from rising next spring to a peak substantially higher even than the peak of last spring. In fact, some of the leaders in the industry feel that gasoline stocks should not be permitted, next spring, to go much above 80,000,000 barrels, but it is doubtful if such a degree of restraint can be achieved.

Summary of Wells Completed in the United States Week Ending December 4, 1937

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total, 1937	Total this Date, 1936
Alabama	.....	.....	.....	.....	.....	2	2
Arkansas	.....	.....	.....	.....	.....	128	88
California	20	20	.....	.....	19,465	1,374	1,046
Colorado	.....	.....	.....	.....	.....	18	18
Florida	.....	.....	.....	.....	.....	1	2
Illinois	11	7	.....	4	1,379	350	4
Indiana	.....	.....	.....	.....	.....	122	165
Kansas	35	26	4	5	17,515	2,524	1,590
Kentucky	17	7	4	6	585	524	256
Louisiana	36	24	3	9	13,923	943	950
Michigan	13	4	2	7	1,085	890	728
Mississippi	.....	.....	.....	.....	.....	15	8
Montana	3	1	1	1	150	193	178
Nebraska	.....	.....	.....	.....	.....	.....	1
New Mexico	8	7	.....	1	2,595	644	533
New York	4	.....	3	1	.....	25	.....
Ohio	21	5	9	7	206	1,393	1,810
Oklahoma	47	35	3	9	5,215	2,780	2,690
Pennsylvania	7	3	3	1	36	195	.....
Texas	245	197	9	39	238,012	14,157	11,806
Utah	1	.....	1	.....	.....	1	.....
West Virginia	23	3	17	3	18	911	581
Wyoming	3	1	.....	2	240	102	86
Total this week	494	340	59	95	300,424	27,292	22,542
Total last week	568	403	56	109	514,362	.....	.....
Total this year	27,242	19,003	2,344	5,945	22,801,000	.....	.....

CRUDE OIL PRICES

Complete tables of prices paid for crude oil at the well in principal fields is shown on page 60. This schedule will appear only in the first issue of each month.

In the week ended November 27, gasoline inventories were increased approximately 1,000,000 barrels, to a total of 68,544,000 barrels. At that level, the gasoline stocks were 19.4 percent greater than one year previously. This large gain over a year ago obviously is not justified. For the demand for gasoline has been running only about 10 percent greater this year than last year.

Refinery Prices

U. S. motor gasoline ranged in the Oklahoma market last week about as follows: 62 octane and below, 4⅛ to 4⅜ cents a gallon; 63 to 66 octane, 4½ to 4¾ cents; 67 to 69 octane, 4⅞ to 5⅛ cents; and 70 to 72 octane, 5¼ to 5½ cents.

Corresponding prices in the Chicago market were as follows: 3⅞ to 4¼ cents, 4¼ to 4¾ cents, 4½ to 5 cents, and 4¾ to 5¼ cents.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4 to 4¼ cents a gallon for the 41-43 water white grade, and from 4⅛ to 4⅜ cents for the 42-44 water white grade. Corresponding prices in the Chicago market were: 4 to 4¼ cents and 4⅛ to 4⅜ cents.

Fuel oil prices were mostly unchanged. In the Chicago market range oil was priced from 4 to 4⅛ cents a gallon. The No. 1 white oil was priced from 4 to 4⅛ cents, and the No. 1 straw from 3⅞ to 4 cents. No. 2 straw was 3¾ to 3⅞ cents and No. 2 dark from 3½ to 3⅝ cents. No. 3 oil was 3⅜ to 3½ cents. No. 4 was $1.05 to $1.10 a barrel to domestic consumers and 95 cents to $1.10 to industrial buyers. No. 5 oils were 80 to 85 cents for domestic and 77½ to 85 cents for industrial sales. The No. 6 oil was quoted to the usual industrial customers at 55 to 65 cents a barrel.

A. C. MOSES and **DON BURNETT,** agents of the Petroleum Conservation Division of the United States Department of the Interior, have been transferred from Corpus Christi to East Texas.

Comparison of Permits Granted for New Wells

STATE	Week Ending Dec. 4	Total this Mo.	Total this Year	Total this Date Last Year	1936 Year Total
Arkansas	4	4	235	92	103
California	28	28	1,500	993	1,054
Louisiana	17	17	1,179	1,037	1,107
Kansas	28	28	2,562	1,714	1,873
Michigan	4	4	907	696	762
Oklahoma	34	34	2,594	2,680	2,594
Texas	342	342	16,345	14,069	15,582
Total	457	457	25,322	21,281	23,075

U. S. Production Drops Again

A decline of 35,925 barels per day puts output 94,750 barrels below recommendation of the Bureau of Mines.

UNITED STATES crude oil production declined further during the past week, ended December 4, as output of the wells only averaged 3,394,550 barrels daily. That was 35,925 barrels a day less than in the previous week, and 96,750 barrels a day less than the average daily production recommended for December by the Bureau of Mines.

Since the state allowables for December have been reduced somewhat, in comparison with the allowables for the month of November, the production in the first half week of December was considerably more in line with market requirements.

Oklahoma-Kansas Down

The decrease in production last week resulted from sharp declines in Oklahoma and Kansas and slight drops in Texas, Louisiana and California.

Oklahoma last week averaged 556,100 barrels daily, which was 11,725 barrels a day less than in the previous week, 32,700 less than the Bureau of Mines estimate, but 6100 barrels a day more than the state allowable.

Kansas output decreased 10,525 barrels to 168,775 barrels a day, which was 17,225 under the indicated demand and 7925 barrels a day below the allowable prescribed by the state.

Texas showed a decline of 2000 barrels, averaging 1,315,200 barrels a day, having been 84,600 barrels under the Bureau of Mines estimate and 38,943 under the state allowable.

Louisiana likewise showed a small decline of 1050 barrels a day, averaging 243,075 barrels daily, which was 925 barrels less than the Bureau of Mines recommendation, and 10,900 less than the state allowable.

California output was down 5000 to 700,000 barrels daily, having been 20,600 barrels a day in excess of the Bureau of Mines estimate, and 25,400 barrels in excess of the recommendation of the Central Committee of California Oil Producers.

Richfield oil leases 38,000 acres in Santa Maria Valley

Los Angeles.—Richfield Oil Corporation recently filed leases covering 38,100 acres in the Santa Maria Valley.

The largest body is that of the Sisquoc Ranch of 35,400 acres. The Tinaquoc Ranch of 2700 acres also is included.

Sisquoc Ranch lies 15 miles southeast of current Santa Maria Valley activity and the Tinaquoc Ranch acreage is very close to Gato Ridge. Considerable geological work has already been done and a geophysical study will be made of the properties before locations are staked.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Dec.)	State Allowable in December	BARRELS DAILY FOR WEEK ENDED	
			December 4	November 27
TEXAS—				
Texas Panhandle	.....	.....	72,400 *	72,100
North Texas	.....	.....	72,500	72,700
West Central Texas	.....	.....	33,600	33,800
West Texas	.....	.....	188,500	188,600
East Central Texas	.....	.....	99,800	96,800
East Texas Field	.....	.....	415,700	431,500
South Texas	.....	.....	240,400	235,000
Texas Gulf Coast	.....	.....	192,300	186,700
Total Texas	1,399,800	†1,354,143	1,315,200	1,317,200
CALIFORNIA—				
Long Beach	.....	.....	58,000	58,500
Santa Fe Springs	.....	.....	41,500	42,000
Huntington Beach	.....	.....	35,000	37,500
Dominguez	.....	.....	30,000	30,000
Inglewood	.....	.....	15,500	17,000
Ventura Avenue	.....	.....	34,500	36,500
Seal Beach	.....	.....	9,000	9,500
Midway-Sunset	.....	.....	78,500	73,000
Elwood	.....	.....	8,000	8,000
Kettleman Hills	.....	.....	81,500	80,000
Mountain View	.....	.....	15,000	15,500
Playa del Rey	.....	.....	8,000	8,000
Wilmington	.....	.....	63,000	60,500
Others	.....	.....	222,500	229,000
Total California	679,400	*674,600	700,000	705,000
OKLAHOMA—				
Oklahoma City	.....	.....	114,375	125,575
Seminole Area	.....	.....	108,475	107,950
Crescent	.....	.....	10,700	9,825
Lucien	.....	.....	13,100	13,650
Fitts	.....	.....	82,225	80,250
Edmond	.....	.....	12,500	11,800
Moore	.....	.....	9,500	9,800
Others	.....	.....	205,225	208,975
Total Oklahoma	588,800	550,000	556,100	567,825
LOUISIANA—				
North Louisiana	.....	.....	74,875	74,925
South Louisiana	.....	.....	168,200	169,200
Total Louisiana	244,000	253,975	243,075	244,125
KANSAS—				
Ritz-Canton	.....	.....	4,100	5,025
Chase	.....	.....	6,375	6,750
Hollow-Nikkel	.....	.....	2,600	2,550
Sedgwick	.....	.....	3,850	3,825
Burrton-Haven	.....	.....	10,025	10,100
Lorraine	.....	.....	2,750	3,175
Russell County	.....	.....	28,750	30,900
Silica-Isern	.....	.....	11,900	14,050
Others	.....	.....	98,425	102,925
Total Kansas	186,000	176,700	168,775	179,300
NEW MEXICO	104,100	107,600	104,000	104,800
MICHIGAN	51,800	.....	54,800	55,100
ARKANSAS	33,900	.....	44,100	45,025
MOUNTAIN STATES—				
Wyoming	57,100	.....	55,200	57,200
Montana	15,800	.....	15,000	15,100
Colorado	4,400	.....	4,200	4,200
Total Rocky Mountain States	77,300	.....	74,400	76,500
EASTERN STATES—				
Pennsylvania Grade	.....	.....	77,300	78,400
Southern Illinois (New Pools)	.....	.....	21,800	18,500
Illinois-Indiana (Old Pools)	.....	.....	15,000	16,300
Others, Eastern	.....	.....	20,000	22,400
Total Eastern States	126,200	.....	134,100	135,600
Total United States	3,491,300	.....	3,394,550	3,430,475

† Allowable as of November 16; increased by December 1 through completion of new well
* Recommendation of Central Committee of California Oil Producers.

CRUDE OIL PRICE SCHEDULES

(Figures Revised to December 3, 1937)

MID-CONTINENT GRAVITY SCALE PRICES (Posted January 28, 1937)

(Some fields of Mid-Continent have flat price postings, and are shown separately.)

Gravity	Okla.-Kans.	North La.-Ark.	Rodessa, La.-Tex.	North & W. Cent. Tex.	East Cent. Tex.	Gray Co. Tex.	Carson Hutchinson Co. Tex.	[1]Conroe Tex. Type	West Tex.-N. Mex.	[2]Gulf Coast (Tex.-La.)	[3]Some La. Gulf Areas	[4]Anahuac, Tex. Type	[5]Refugio, Tex. Type	[6]Mirando, Tex. Type
17–17.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.90	.....	.....	.....
18–18.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.92	.....	.....	.....
19–19.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.94	.....	.....	.....
20–20.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	*$0.95	.96	.....	*$1.01	*$0.96
21–21.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.98	.98	.....	1.03	.98
22–22.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.01	1.01	.....	1.05	1.00
23–23.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	1.04	1.04	.....	1.07	1.02
24–24.9	*$0.98	*$0.90	*$0.93	*$0.88	.....	.....	.....	.....	.....	1.07	1.07	.....	1.09	1.04
25–25.9	1.00	.92	.95	.90	.....	.....	.....	.....	*$0.78	1.10	1.10	.....	1.11	1.06
26–26.9	1.02	.94	.97	.92	.....	.....	.....	.....	.80	1.13	1.13	.....	1.13	1.08
27–27.9	1.04	.96	.99	.94	.....	.....	.....	.....	.82	1.15	1.15	.....	1.15	1.10
28–28.9	1.06	.98	1.01	.96	*$1.03	.....	.....	*$1.20	.84	1.17	1.17	.....	1.17	1.12
29–29.9	1.08	1.00	1.03	.98	1.05	.....	.....	1.22	.86	1.19	1.19	.....	1.19	1.14
30–30.9	1.10	1.02	1.05	1.00	1.07	.....	.....	1.24	.88	1.21	1.21	$1.16	1.21	1.16
31–31.9	1.12	1.04	1.07	1.02	1.09	.....	.....	1.26	.90	1.23	1.23	1.18	1.23	1.18
32–32.9	1.14	1.06	1.09	1.04	1.11	.....	.....	1.28	.92	1.25	1.25	1.20	1.25	1.20
33–33.9	1.16	1.08	1.11	1.06	1.13	.....	.....	1.30	.94	1.27	1.27	1.22	1.27	1.22
34–34.9	1.18	1.10	1.13	1.08	1.15	*$0.96	*$0.91	1.32	.96	1.29	†1.29	1.24	1.29	1.24
35–35.9	1.20	1.12	1.15	1.10	1.17	.98	.93	1.34	.98	1.31	.....	1.26	1.31	1.26
36–36.9	1.22	1.14	1.17	1.12	1.19	1.00	.95	1.36	1.00	1.33	.....	1.28	1.33	1.28
37–37.9	1.24	1.16	1.19	1.14	1.21	1.02	.97	1.38	1.02	1.35	.....	1.30	1.35	1.30
38–38.9	1.26	1.18	1.21	1.16	1.23	1.04	.99	1.40	1.04	1.37	.....	1.32	1.37	1.32
39–39.9	1.28	1.20	1.23	1.18	1.25	1.06	1.01	1.42	1.06	1.39	.....	1.34	1.39	1.34
40 & Above	1.30	1.22	1.25	1.20	1.27	1.08	1.03	1.44	1.08	1.41	.....	1.36	1.41	1.36

* Minimum price and applies also to purchases of lower gravity.

[1] Conroe, Tomball, Satsuma, Raccoon Bend Deep fields.

[2] Upper Texas Gulf Coast, including Goose Creek, Spindle Top, etc., and some fields of Louisiana Gulf Coast, including Black Bayou, White Castle, Vinton, Hackberry, etc., except that top price for those Louisiana fields is $1.29 for 34 gravity and above.

[3] Choctaw, Darrow, Lockport, Iowa (Magnolia posting), Cameron Meadows, etc.

[4] Anahuac, Dickinson, Flour Bluff, Turtle Bay.

[5] Lower Texas Gulf Coast, including Refugio, Saxet, etc. Posted 7-6-37.

[6] Duval, Jim Hogg, Webb and Zapata Counties; Heyser, Placedo fields. Posted 7-6-37.

† Maximum price and applies also to purchases of higher gravity.

Mid-Continent Flat Prices

	Flat Price	Date Posted
Arkansas:		
Smackover	$0.90	1–28–37
Louisiana:		
Garden Island	1.37	1–28–37
Lafitte	1.24	1–28–37
Texas:		
East Texas	1.35	5–22–37
Talco	.73	1–28–37
Livingston, Cleveland	1.27	1–28–37
Hardin	1.15	1–28–37
Van	1.10	1–28–37
Pettus	1.37	1–28–37
Pecos County	.91	1–28–37
Pecos Shallow	.81	1–28–37
Luling	1.00	1–28–37
Lytton Springs	1.12	1–28–37
Salt Flat, Darst Creek, Hilbig, Carroll, Clark, Zoboroski	1.09	1–28–37

Michigan Prices

Central Michigan	$1.27	7–24–37

Middle West Prices

Lima	$1.25	1–28–37
Illinois	1.35	1–28–37
Princeton	1.35	1–28–37
Western Kentucky	1.40	1–28–37

Rocky Mountain States Prices

	Flat Price	Date Posted
Elk Basin	$1.30	1–28–37
Frannie Light	.70	11– 4–36
Frannie Heavy	.62	11– 4–36
Grass Creek Light	1.30	1–28–37
Grass Creek Heavy	.62	11– 4–36
Hamilton Dome	.57	11– 4–36
Big Muddy	1.23	1–28–37
Rock Creek	1.20½	1–28–37
Sunburst	.90	11–16–37
Lance Creek	.97	1–28–37
Osage	1.08	.....
Cat Creek	1.07	8–25–33
Cut Bank	1.35	6– 3–36
Pondera	1.05	9–29–33
Hogback	1.00	9– 8–33

Pennsylvania Prices

Bradford-National Transit	$2.20	12–1–37
Sw. Pa. Pipe Line	1.88	12–1–37
Eureka Pipe Line	1.82	12–1–37
Buckeye Pipe Line	1.70	12–1–37
Corning Grade	1.27	12–1–37

Canada Prices

Petrolia	$2.10	9– 9–33
Oil Springs	2.17	9– 9–33

Mexico Prices

F.O.B. Tampico; net; U. S. Currency, buyer pays tax	$0.95	Oct., 1937

Major Price Changes

	Penns. (Nat. Tr.)	Mid.-Cont. (36 Gr.)	Calif. (26 Gr.)
June 19, 1933	Up 10	Up 19	.....
June 26, 1933	Up 10	.....	Up 9-12
July 6, 1933	Up 13	Up 10	.....
July 17, 1933	Up 15	.....	.....
July 28, 1933	Up 15	.....	.....
August 11, 1933	Up 10	.....	.....
August 24, 1933	.....	Up 10	.....
August 30, 1933	Up 15	.....	.....
September 6, 1933	Up 10	Up 10	Up 15
September 8, 1933	.....	Up 15	.....
May 1, 1934	Up 10	.....	.....
November 6, 1934	Cut 25	.....	.....
December 6, 1934	Cut 25	.....	.....
January 4, 1935	Up 15	.....	.....
February 4, 1935	Up 15	.....	.....
May 16, 1935	Cut 15	.....	.....
June 26, 1935	Cut 15	.....	.....
July 16, 1935	Cut 10	.....	.....
August 29, 1935	.....	.....	Cut *1
September 6, 1935	Up 5	.....	.....
October 29, 1935	Up 15	.....	.....
November 1, 1935	.....	.....	Up* 28
November 18, 1935	Up 15	.....	.....
December 6, 1935	.....	.....	Up *9
January 9, 1936	.....	Up 10	.....
January 13, 1936	Up 15	.....	.....
February 26, 1936	.....	.....	Up †5
December 28, 1936	Up 12	.....	.....
January 28, 1937	.....	Up 12	.....
February 24, 1937	Up 10	.....	.....
June 7, 1937	Up 15	.....	.....
September 1, 1937	Cut 22	.....	.....
October 12, 1937	Cut 25	.....	.....
December 1, 1937	Cut 15	.....	.....

* Signal Hill 26 gravity. † Seal Beach 26 gravity.

Crude Production Taxes

Oklahoma—Five percent of gross value less royalty interest.

Texas—2¾ cents or 2¼ percent, whichever is higher.

Louisiana—From four to 11 cents a barrel, depending upon gravity.

Arkansas—2.6 percent of gross market values.

Montana—Two percent of gross value at well and ⅜ of 1c per barrel.

New Mexico—Severance tax of 2 percent on oil and gas.

Wyoming and New Mexico—Production tax based upon state and county assessments.

California—.66443 mills per barrel of oil produced and 17.39 cents an acre on proved lands.

Proration

[*Continued from page 12*]

that which has been conducted in the Agua Dulce field where the gas had been stripped by high-pressure separators and the residue returned to the sand.

Two such experiments have been authorized in the Cayuga field, Anderson County, where Tide Water Associated Oil Company has been authorized to process gas from the Trinity formation, repressuring the Woodbine with part of this gas, and recycling the remainder to the Trinity.

The hearing was delayed because commission engineers and private companies had not yet assembled all the information they desired to present for consideration.

U. S. checking output of many fields

A constant check on fields where sudden heavy production may occur is being maintained by the Petroleum Conservation Division of the Interior Department, it was disclosed last week by the annual report of Secretary Harold L. Ickes.

Pointing out that while but one tender board has so far been established, additional boards can be created at any time, should need arise, the secretary revealed that the Rodessa field has been under constant observation during the past year, and that examinations were made in other areas, including Corpus Christi, Conroe and Talco. In addition, he said, reports covering operations in Oklahoma, New Mexico and Kansas were received and checked periodically.

In the East Texas field, the report showed, production during the fiscal year ended June 30, last, amounted to 160,717,784 barrels of crude oil, of which 148,167,000 barrels, or 92 percent, was shipped from the field on federal tenders. Although only 8 percent of the crude is refined in the field, the petroleum products, including casinghead gasoline and butane, moving on federal tenders totaled 23,230,000 barrels during the year.

The Tender Board and the Petroleum Agency during the year received and considered a total of 6420 applications for tenders, of which 4120 were for 227,104,844 barrels of crude oil and 2300 for 23,187,091 barrels of refined products. All were approved except 65 tenders for crude and 28 for refined products.

Five-day potential tests slated for Turner Valley

Hon. N. E. Tanner, Alberta minister of lands and mines, announced last week that five-day tests will be taken immediately to determine producing capacity of Turner Valley wells. The action, requested by major producing companies in Canada, will be followed by new production figures where the tests reveal present prorated production is out of line with the new potential figures. Present potentials were established after three-day production tests, and the new tests may result in upward revision of the prorated production of 35 percent now allowed as it is believed that the longer tests will establish smaller potentials.

Pennsylvania Grade Crude prices reduced further

For the third time in as many months, prices of Pennsylvania Grade Crude were reduced, bringing present postings to the lowest point in two years and only 25 cents above the low for the past four years. Joseph Seep Purchasing Agency of the South Penn Oil Company announced the reductions, which became effective December 1 and which range from 15 to 18 cents, and other purchasing companies announced they would change their prices accordingly.

A decreased refinery demand for Pennsylvania grade crude brought the latest price cut. Runs to stills averaged approximately 78,000 barrels per day during the first three weeks of November, according to calculations of the National Petroleum Association whereas production, as reported by the American Petroleum Institute, averaged approximately 81,000 barrels a day. Indications that several refiners would curtail their runs in the near future threatens to unbalance the picture still further.

The first reduction in the Pennsylvania grade crude price this fall came September 1 and ranged from 22 to 27 cents a barrel. A second general reduction of 25 cents was made October 12.

New quotations of the Seep Agency follow:

New York Transit, Bradford Transit and National Transit lines in the Bradford field, $2.20, down 15 cents; Bradford Transit lines in the Allegany field, $2.20, down 15 cents; South West Pennsylvania lines, $1.88, down 17 cents; Eureka lines, $1.82, down 18 cents; Buckeye lines, $1.70, down 15 cents.

The price of Corning grade crude remains unchanged at $1.27.

CALIFORNIA CRUDE OIL PRICES

(Posted February 26, 1936; except El Segundo and Wilmington, posted October 15, 1937.)

All gravity above those quoted take highest prices of that field.

Gravity	El Segundo & Signal Hill	Seal Beach Alamitos Heights	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canyon	Athens Rosecrans	Torrance	Richfield	Whittier East Coyote La Habra	Montebello	West Coyote Hills	Santa Fe Springs	New Hall McKittrick Kern River Round Mountain	Mountain View	Midway-Sunset Buena Vista Hills Elk Hills	Lost Hills	Coalinga	Wheeler Ridge	Wilmington
14-14.9	$.80	$.79	$.78	$ 79	$.80	$.76	....	$.80	$.76	$.76	$.77	$.78	.....	$.70	....	$.70	$.70	$.70	....	$.75
15-15.9	.80	.79	.78	.79	.80	.76	....	.80	.76	.76	.77	.78	.....	.70	....	.70	.70	.70	....	.75
16-16.9	.80	.79	.78	.79	.80	.76	....	.80	.76	.76	.77	.78	.....	.70	....	.70	.70	.70	....	.75
17-17.9	.80	.79	.78	.81	.80	.76	....	.80	.76	.76	.77	.78	.....	.70	....	.70	.70	.70	....	.77
18-18.9	.80	.79	.78	.84	.80	.78	....	.82	.76	.76	.77	.78	.....	.70	....	.70	.70	.70	....	.79
19-19.9	.82	.79	.82	.87	.84	.81	....	.85	.76	.78	.77	.78	.....	.70	$.70	.74	.74	.71	$.70	.82
20-20.9	.85	.79	.85	.90	.88	.84	....	.88	.78	.82	.77	.80	.....	.....	.70	.78	.78	.72	.70	.85
21-21.9	.88	.79	.89	.93	.93	.88	....	.91	.80	.85	.77	.84	$.78	.....	.73	.82	.82	.74	.70	.88
22-22.9	.92	.82	.92	.96	.98	.92	....	.93	.84	.89	.79	.88	.78	.....	.77	.87	.86	.78	.72	.92
23-23.9	.95	.86	.96	.99	1.02	.96	$.84	.96	.88	.93	.82	.92	.78	.....	.80	.92	.90	.82	.76	.95
24-24.9	.99	.91	1.00	1.02	1.06	.99	.88	.99	.91	.96	.85	.96	.82	.....	.84	.97	.94	.86	.79	.99
25-25.9	1.03	.95	1.03	1.05	1.11	1.03	.93	1.02	.95	....	.89	.99	.86	.....	.88	1.01	.98	.90	.83	1.03
26-26.9	1.06	1.00	1.07	1.09	1.16	1.06	.98	1.05	.98	....	.92	1.03	.90	Elwood	.91	1.06	1.02	....	....	1.06
27-27.9	1.10	1.05	1.11	1.12	....	1.10	1.03	....	1.02	....	.96	1.06	.95	Ter-	.95	1.10	1.06	....	....	1.10
28-28.9	1.14	1.10	1.14	1.15	....	1.14	1.07	....	1.06	....	.99	1.10	.99	race	.99	1.15	1.10	....	....	1.14
29-29.9	1.17	1.15	1.18	1.18	F.O.B.	1.17	1.12	....	1.09	....	1.03	1.14	1.03	.....	1.02	1.20	1.14	....	....	1.17
30-30.9	1.21	1.19	1.22	1.21	Pipe	1.21	1.17	....	....	....	1.07	1.17	1.08	F.O.B.	1.06	1.25	1.18	....	....	1.21
31-31.9	....	.....	....	1.24	Line	1.24	1.22				1.11	1.21	1.12	Ship	1.09	1.29	....	....	....	....
32-32.9	....	.....	....	1.27	....	1.27	1.27	Kettleman Hills			1.14	1.25	1.16	.....	1.13	1.34	....	....	....	....
33-33.9	....	.....	....	....	....	....	1.32	1.19			1.18	1.28	1.20	1.28	1.17	1.38	....	....	....	....
34-34.9	....	.....	....	....	....	....	1.37	....	1.23	....	1.22	1.32	1.25	1.32	1.20	.....	...	....	....	....
35-35.9	....	.....	....	....	....	....	1.42	....	1.27	....	1.25	....	1 29	1.35	....	.....	....	....	....	....
36-36.9	....	.....	....	....	....	....	1.46	....	1.31	....	1.29	....	1.33	1.39	....	.....	....	....	....	....
37-37.9	....	.....	....	....	....	....	1.51	....	1.35	....	1.32	....	1.37	1.43	....	.....	....	....	....	....
38-38.9	....	.....	....	....	....	....	1.56	....	1.39	....	1.36	....	1.42	....	....	.....	....	....	....	....
39-39.9	....	.....	....	....	....	....	1.61	....	1.43	....	1.40	....	.....	.....	....	.....	....	....	....	....
40-40.9	....	.....	....	....	....	....	1.66	....	....	....	1.43	....	.....	.....	....	.....	....	....	....	....

Labor Situation

[*Continued from page 15*]

as to whether it will fulfill its announced purpose of spreading employment.

A general exception allowing employers of three or less persons to maintain 54-hour work weeks, divided into six 9-hour days, granted last week will be of little benefit to stripper well operators who are dependent upon pumpers in charge of their leases to be on duty longer hours when work requires it. General provisions of the law set the work week at 44 hours, with eight hours as the maximum work day.

Compensation Law Challenged

Constitutionality of Pennsylvania's new workmen's compensation law which becomes effective January 1 is being challenged by two companies who filed petitions seeking injunction relief in the Dauphin County court at Harrisburg. It is directed against Ralph M. Bashore, secretary of labor and industry.

The action specifically assails clauses in the new act which broaden the employers' liability for diseases and infections resulting from hurts, the petitioners contending these provisions would greatly increase the cost of insurance.

Other objections cited were that the law would make employers liable for injuries received elsewhere than on their own property, that they would be liable for an injured employee not working in accordance with the law, that compensation would be allowed in excess of wages received by many workers and that the compensation board may say what the future earnings of the injured shall be.

Besides allowing benefits for occupational diseases, the new compensation act would increase the maximum benefits from $15 to $18 per week, and the minimum payments for disability from $7 to $12. It also requires employers to bear the cost of administration of compensation.

The court set December 28 for the state to show why an injunction should not be granted.

Union Intervenes in Hearing

At a recent National Labor Relations Board hearing in Muskogee, Oklahoma, in which the C.I.O. charged The Pure Oil Company of having aided rival employees federations, two A.F.L. affiliated unions were granted the right to intervene.

The A.F.L. Unions, the International Association of Machinists and the International Brotherhood of Boilermakers, claimed the right to intervene in order to protect their rights in workers organizations they claim at the refinery

The C.I.O. union contended The Pure Oil Company sponsored the federation and spread propaganda against the oil workers union in violation of the labor relations act.

Oil Workers Share Prosperity

Despite the somewhat reduced business activities during the latter part of this year and the uncertainty now generally prevailing, earnings of employees in all phases of the industry still stood at high levels at the end of August. The production and refining divisions of the industry continued to pay employees better than average wages and salaries.

Figures of the Department of Labor show that the production division in August further increased its payrolls 4/10 of 1 percent over July of this year, and increased employment 1 percent. The payrolls were up 19.3 percent from August last year, while employment was 7.2 percent higher.

The average hourly earnings in August were 83.9 cents, or 9.2 percent higher than in the same month last year. However, payrolls in August, 1937, were 29.8 percent below those of August, 1929, while employment was 19.6 percent lower.

In the month of August of this year, earnings in the refining division of the industry remained at high levels, hourly wages standing at 97.2 cents, which was about ½ cent per hour higher than in the previous month, the years all-time record. According to figures of the Department of Labor, payrolls in the crude-petroleum refining industry for August stood at 150.3 percent of the average for the three year period 1923 to 1925. That compared with payrolls 105.5 percent of the three years average in August, 1936, and 102.5 percent in August, 1935, representing increases of 42.4 and 46.6 percent, respectively.

Oil in Courts

[*Continued from page 13*]

crude to northern and eastern refinery centers.

When facilities of major companies were eventually increased to the point where they could produce more than they could sell, they became competitors of independent refiners, whereas formerly they were customers. The independents, he explained, were reduced to independent jobbers and truck buyers, and this market, too, was eventually sought by the majors.

When production in the East Texas field resulted in a severe surplus, hot oil soon found its way into independent plants because of inability of small refiners to operate on crude at $1 a barrel with the prevailing price of gasoline. Adoption of "Nine-C" the hot oil amendment, to the petroleum code in March, 1934, put a stop to purchases of illegally produced oil, he said.

Shatford's testimony was introduced to show the chaotic condition of the industry and the need of a stabilizing influence.

Texas anti-trust suit rehearing overruled

The Texas Supreme Court has overruled a motion for rehearing in the Allred anti-trust suit. This is the suit filed by Governor James V. Allred at the time he was attorney general of Texas which involves an alleged agreement to fix the price of gasoline in Texas. Named as defendants in the suit were 15 major oil companies operating filling station chains in the state, the American Petroleum Institute and a Texas marketing association.

The oil companies now have under consideration an appeal from the decision of the state court, which must be taken to the United States Supreme Court for final adjudication. If this course is not followed, then the oil companies must go to trial in the case in a district court of Travis County, Texas.

The suit was filed in 1932, and a demurrer was sustained by the trial court which based its ruling on the theory that the National Industrial Recovery Act had superseded the Texas anti-trust laws.

Taxation

[*Continued from page 15*]

there will be no tax on capital investment. It is a proper method of correlating our capital gains tax with our method of taxing natural resource industries."

In an interview previous to his appearance on the program, Alvord said he believed the Treasury Department would abandon its effort to eliminate percentage depletion for oil and concentrate its efforts on a reduction in the allowance. He said, however, that all studies he had considered lead to the conclusion that the existing rate is justified.

The Alvord speech completed the conference of two days. The session Friday morning was devoted to consideration of "Basic Court Decisions Affecting Taxation," by F. P. Hagaman, Standard Oil Company of Louisiana, and "Old Age Benefits Taxation," by Newton Montgomery, Phillips Petroleum Company, Bartlesville.

In his remarks of welcome Thursday morning W. H. Francis, vice president of the Mid-Continent Oil & Gas Association for Texas and general counsel of Magnolia Petroleum Company, urged the conference to oppose unjust taxation.

"My position," he said "is to fight and agree to nothing until the tax burden is so distributed until it is not a burden on one industry." He pictured taxation as a destructive force, so recognized by government with this introduction:

"Taxation destroys. Government recognizes that. Governments do not tax each other and they are jealous of the taxing privilege. Yet the tendency within government is to tax and destroy those who suport government. Government is about to destroy corporations by unjust taxation.

"The policy of government, when it needs more money, is to go where it seems easiest to get. I think taxation has gone far enough against the oil industry.

"My opinion is that we either must halt the mounting tax burden on industries and certain classes of individuals or resort to the sales tax in order to distribute the tax burden evenly."

Francis made the address of welcome in the absence of J. D. Collett, association president, who could not attend.

The remainder of the session Thurs-

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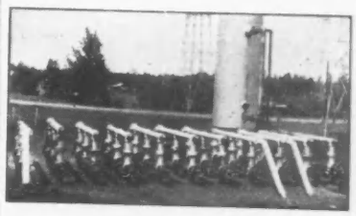

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day morning was given over to routine reports of the standing committee on state and local taxation, of which George W. Foster, The Texas Company, Houston, is chairman, and the standing committee on federal income and excise taxation, whose chairman is F. B. Plant, Cities Service Oil Company, Bartlesville.

Unemployment Acts

In the afternoon W. Leo Austin, Mid-Continent Petroleum Corporation, Tulsa, spoke on "Problems Arising Under State Unemployment Compensation Acts." He pointed out the need for gaining uniformity in the systems of making reports to the several states. Fundamentally the need is identical for each state, still the requirements set out in the statutes differ so widely that conforming to each leaves a burden of accounting with corporations.

Another matter singled out for attention is that of the status of responsibility for payment of the unemployment taxes when work is let to a subcontractor. He said that the statutes as well as rulings of the state departments are confusing on this question.

Chain store taxes were pictured as likely to be turned into means of gaining revenue by J. A. Vorderman, The Texas Company, Denver, in his discussion of "Trends in Chain Store, Use and Sales Taxes." He outlined the history of the chain store tax and described as one designed first to halt the growth of chains of retail establishments. Failure of several states to adopt these taxes in 1937 was cited as an indication that this objective is no longer a paramount issue.

"But," he warned, "the need for revenue still exists and it is reasonable to expect this source of taxes to be pursued as a source of revenue rather than a method of curtailing a system of retail selling."

Tax Situation

The banquet Thursday evening was followed by the address of Baird H. Markham, director of the American Petroleum Industries Committee, New York, whose subject was "The Current Tax Situation." Markham urged the tax experts of the industry to continue their activity of striving to educate the members of legislatures in the evils of unjust taxation. He said he did not believe men who pass harmful tax laws are bent upon burdening industry.

"Unfortunately," he explained, "those who impose and who increase taxes do not always understand taxation and its effects. They may have an understanding of political effects but taxation is not a political matter. It is economic and subject to all the laws of economics. Yet today we continue to tax to the wall, letting bankruptcies fall where they may. We tax big business and ruin little business. We tax the rich but, in the end, soak the poor. Already we are driving property into an economic limbo, killing the property goose that laid the golden eggs. Thinking we are forced to find additional revenues, we are turning to business. As income from property taxes declines, we look to business to make up the deficit. Most people in this country earn their living from business. The high standards of living which the vast majority of them have enjoyed depend upon business being conducted at a profit. It may be comforting to hear that if business is taxed the people will escape but the trouble is that business is comprised of these same people. In the end the money will come from exactly the same pocket.

"It seems to be that in a country where it has been possible to postpone death by healthful living and to control weather by air-conditioning, it should be possible to do something effective about taxation. At the risk of imposing upon your good nature, I would like to suggest that perhaps it is up to you and me, as business men and as professionals in the field of taxation to do some of the doing that must be done.

"It is my conviction that by far the majority of our representatives in government are serious, well-intentioned men. They are able and qualified, when informed, to act wisely upon public matters. As a rule they not only welcome but also seek the advice of those who by training, experience or other qualification are equipped to advise them honestly and fully. Furthermore, I have found that when there is full understanding of any tax question, on the part both of the people and of their legislators, that question usually is answered in a manner satisfactory to all.

"This being so, is it not possible we can find a solution for our tax problems by creating understanding? Could we engage in any more patriotic, any more beneficial endeavor than to convey to the 'don't knows' the information about taxation and its effects so long apparent to the 'do knows?' If we, representing an industry which by sad experience has learned the adverse effects of unwise, unsound and unjust taxation, shall attempt to save others from the fate which has been ours, need we expect or fear honest criticism? It is not our duty, as citizens having ability to judge, to devise and to direct tax policies before damage is done, to render that service to our country and to our native states? If we, knowing that taxes affect all alike and adversely, know also how to correct inimical tax conditions for the benefit of all, should we hesitate?"

Bureau seeks funds for oil technical studies

APPROPRIATION of funds with which to make further technical studies in the physical and chemical properties of various types of crude petroleum in order to make advantageous the results of the recent study of crude oil storage; collection of statistical information regarding underground reserves, and development of data on interstate movements and distribution of gasoline and other finished products, were recommended to the Secretary of the Interior last week in the annual report of the Bureau of Mines.

Discussing the many problems with which the petroleum industry must cope, officials of the bureau expressed the belief that it can render worthwhile service if adequate funds are provided, and the results of that service will be worth many times the expenditure to the industry and to the public.

"The petroleum industry and regulatory bodies realize that the difficult problem of oil and gas well spacing is one of major importance," it was pointed out. Information as to how wells should be spaced to assure maximum recovery through prolonged flowing life is far from complete. A thorough, unbiased study of present-day conditions would aid greatly in conserving and prolonging the life of the Nation's oil supply by showing the fallacies of ruthless offset drilling.

"As new oil reserves are sought in deeper reservoir rocks the cost of removing the oil becomes excessive unless full use is made of the energy of the high-pressure gas associated with the oil. As an aid in the solution of this increasingly serious problem, factual data as to quantities of oil now left in the ground, better utilization of available gas energy, recycling of gas, and storage of gas in partly depleted fields should be collected and widely published.

"Results of the survey of crude oil storage made during the past year show that further technical studies are needed on the physical and chemical properties of various types of crude petroleum if data obtained in the survey are to be used advantageously to obtain optimum refinery yields of required products. Equally important is the collection of statistical information regarding underground reserves so that relationships may be established between desirable volume of oil in storage above ground and the rate at which oil can be produced from underground reserves when a sudden demand arises.

"Additional funds are needed to permit collection of data on interstate movements and distribution of gasoline and other finished petroleum products, which are essential to the studies and forecasts of market demand. These forecasts are invaluable to the petroleum industry, the several state regulatory bodies, and the Federal Government itself in the development of a sound program for oil conservation."

During the past year, it was reported, the bureau has done considerable work on the problem of the spacing of wells so that oil is drained from a producing formation with greatest efficiency and economy, and the petroleum and natural-gas division has established an empirical relation between the mass rate of fluid production (gas, oil and water) and the drop in pressure in the producing formation.

"That the division's research activities are yielding practical benefits," it was said, "is shown by the special reports on producing oil and gas fields that have been made by the bureau upon request of operators desiring to conserve and utilize efficiently the energy in naturally producing structures and of Government organizations concerned with regulation of oil and gas production in various states. During the current year, data reports were made by bureau engineers on the Fitts pool (Oklahoma), the Tepetate oil field (Louisiana), and the Laredo and Otis fields (Kansas) which aided the oil companies in controlling and the authorities in regulating oil and gas production in these fields by supplying needed information from a competent, unbiased source on conditions in the producing formations that effect efficient and economical rates of withdrawal from the natural underground reservoirs."

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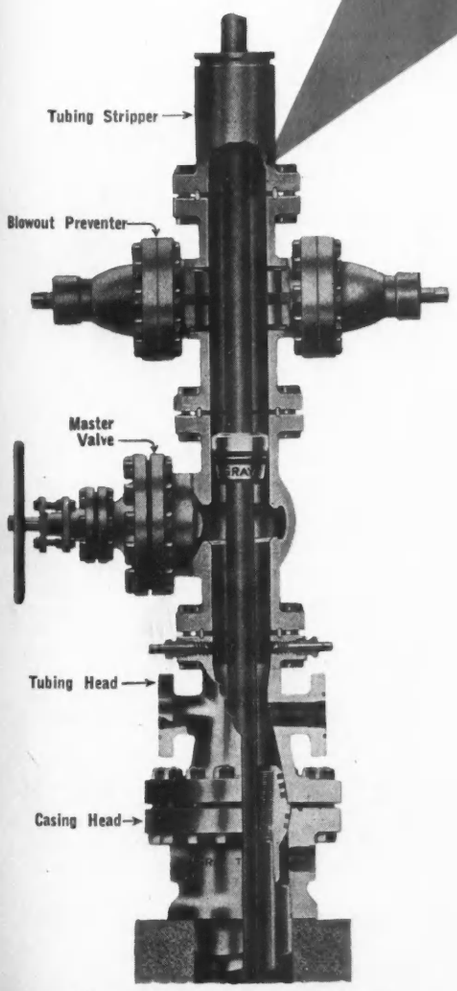

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WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Albertans Encouraged

Five-day potentials expected to increase allowable of Turner Valley; would exclude imports from U. S.

A FURTHER encouraging report that may lead to additional expansion of the Alberta crude market in Canada came last week when it was definitely announced that freight rates on crude shipped to Vancouver and other West Coast points would be reduced in spring. Expansion of refineries at Calgary and Regina, the latter made possible because of reduced freight rates to that Saskatchewan point, construction of a refinery in the Turner Valley field, and announcement that a large marketing company would switch from gasoline produced from California crude to that manufactured from Turner Valley crude were made last week. While no definite indication as to what the new freight rate on crude shipped to Vancouver has been made, 23 cents is frequently mentioned. The present rate is 40½ cents. Chances are too, the present allowable of 35 percent of potential in Turner Valley will be raised.

Canadian oil operators hope for satisfactory solution of their crude marketing problem before late spring. An attempt is being made to arouse public sentiment to the plight of the industry and campaigns seeking consumer demand of gasoline manufactured from Alberta crude to the exclusion of that imported from the United States or manufactured from United States crude have been launched in Alberta.

Of 24 wells completed on the West Flank of Turner Valley since June, 1936, an average initial production of more than 500 barrels daily was obtained from 19, while only two were complete dusters.

Gas Waste High

Steps are being taken by provincial government officials, who are receiving the cooperation of operators, to stop the waste of gas in Turner Valley which, if continued at the present rate of more than 250,000,000 cubic feet a day from naphtha wells alone, threatens to make it necessary for operators to resort to artificial methods of bringing crude to the surface before long. Hon. N. E. Tanner, Alberta minister of lands and mines, announced last week that information on the subject would be assembled before the end of the year, after which a conservation plan would be inaugurated.

A survey of Turner Valley operations as the week closed revealed five wells in the Madison limestone, producing formation, one about to enter the limestone, fifteen additional tests drilling, six temporarily idle and 11 in various stages prior to being spudded.

National Petroleum Corporation's 1, Legal Subdivision 8, Section 29, Township 18, 2-w5, stopped drilling at 7158 feet, 372 feet in the lime which was contacted at 6786 feet, and was to be placed on test over the week-end. One of the few Turner Valley wells to be completed with cable tools, a 500-barrel tank was filled by production obtained through the six-inch casing within a short time after crude was encountered at 355 feet and while the test was still drilling. Ample storage has been erected at the site to take care of crude during a test.

Mexico City, Dec. 2.—Richmond Petroleum Company was denied an injunction by a local district court against enforcement of the presidential decree of November 4 that federalizes a large amount of its lands in Tabasco and Chiapas states. The court held that the decree is in good order for is considers that the petroleum industry is a public utility as it is one of the chief sources of national wealth.

The ruling is of special interest as three other oil enterprises including the Mexican diversified lands have filed similar suits in the same court.

Five Completions Due

West Flank Oil Company's 1, Legal Subdivision 1, Section 32, Township 18, 2-w5, should be the second to complete. A re-cementing job was necessary and a production test was to be taken as soon as the plug had hardened sufficiently to permit drilling in. Other tests in the lime are: Royalite Oil Company's Royal Canadian 1, Legal Subdivision 15, Section 20, Township 18, 2-w5, which encountered the Madison at 6960 feet and was drilling at 7050 feet as the week closed; Sunset Oils' 1, Legal Subdivision 10, Section 20, Township 18, 2-w5, encountered the Madison lime at 7000 feet and was cemented at 16 feet in that formation; Richland Oil Company's 2, Legal Subdivision 2, Section 28, Township 18, 2-w5, in the heart of the crude area, encountered the lime at 6410 feet. Casing was being taken to location and will be cemented in the hole at that depth.

Second Largest Well

Royalite Oil Company's Sterling-Pacific 6, Legal Subdivision 5, Section 33, Township 18, 2-w5, completed at 7117 feet with an initial of 700 barrels daily, produced 2850 barrels on the third day of a three-day production test following acid treatment. It's yield was within 150 barrels of Davies Petroleums' 2, largest Turner Valley producer, which has a potential of 3000 barrels daily.

Several Tests Planned

W. S. Herron, president of Okalta Oils, Ltd., announced that negotiations are under way which will result in drilling several wells on the company's acreage on the west flank of the Valley, extending from the south end up to the central part of the field. Leases granted by the company specify that not more than one well can be drilled on 40 acres without consent of Okalta. Operators are given an option on a second location, with work to be started within three months of completion of a producer on the first 40 acres. The company has royalties ranging from 10 to 15 percent on four of the larger producers, while three tests are drilling on its acreage.

Taber Test Showing

On the Taber structure, near the International boundary, Plains Petroleum Corporation's No. 3 was running casing to 3106 feet, top of the pay formation, after which it will be carefully deepened to expected production in an effffort to prevent water intrusion which caused considerable trouble at No. 1. Repairs have been made to the pumping equipment at No. 2 and the well was to have been placed on regular production over the week-end. On completion of No. 3, the crew will return to No. 1 and make an effort to obtain a satisfactory completion. Material is being hauled for the company's No. 4.

Well drilling promises to erase the old Mexican town of Panuco, Vera Cruz state. Five companies and individuals have asked for rights to drill in the town.

Mexican Deal

[*Continued from page 14*]

ships and enlargement of docking facilities. It is understood that the refineries, predicated on closing of the deal, are to be constructed by United States interests, and the ships by builders in Scotland.

In repayment of these loans and credits, the government is to deliver 60 percent of its oil production from the new development to the interests making the advances. Based on the minimum guarantee of the Mexican Eagle of 12,500 barrels of oil a day alone, that would be 7500 barrels without taking into consideration other possible production.

Bearing on Future

The deal as a whole, concluded and pending, is viewed here by well informed observers who have watched its unfolding, as a stroke of business that not only promises the loosing of a rich flow of oil from which both the government and the Mexican Eagle will profit, but as a possible precedent that may be far reaching in its bearing on the future progress of the country's oil industry. The royalty, or participation, basis that is the outstanding feature of the compact with the Mexican Eagle is new in the government's dealing with foreign owned companies. Whether this policy will be proposed to American-owned companies is a topic of speculation. It seems evident, as some have pointed out, that the government is looking toward its subsoil reserves as a source of increased revenue.

Returns from the current piece of business promise large sums, both immediately, if the deal with the British capitalists for cash and credit advances goes through, and in the future for governmental expenses and new public works.

Labor Question

What effect, if any, the agreement with the Mexican Eagle will have on the outcome of the long-standing controversy between the oil companies and the workers union is another question, the answer to which is lost in speculation. This controversy came to a head May 27 of this year when the Mexican Petroleum Workers' Union called a general strike in the country's oil industry over question of wages, regulations and benefits, a question first raised by the union November 3, 1936. Counter proposal of the oil companies to increase wages and benefits by more than $3,600,000 was refused. After much negotiation, the union announced that the matter would be taken before the Government Labor Board as an "economic issue" for decision as to the companies ability to meet the demands made. The Labor Board on June 8, 1937, took jurisdiction of the issue raised and urged that the strike be called off, which was done by the union June 9.

Since then the matter has been in the hands of the board. A commission of experts named to examine the companies' financial ability to meet the demands of the workers rendered an opinion that the companies were able to accede to the demands of the workers up to an annual amount of approximately $7,225,000. Recently the companies issued a statement to the effect that they were willing to abide by their offer of more than $3,600,000 increase, but could not under present conditions pay the $7,225,000 cited by the experts. The decision of the Labor Board is expected at any time.

Will Not Alter Agreement

The Mexican Eagle is one of the 15 leading oil companies in the country involved in the controversy. Advised opinion is to the effect that the labor issue will not be affected by the government agreement with the Mexican Eagle and there seems little likelihood, from expressions made, that the agreement will bring about any rift in the united front the companies have taken in their stand in the labor dispute.

Under the terms of the new agreement with the government, the Mexican Eagle faces a period of much activity with the coming of the new year in further development of the rich Poza Rica section and the three nearby areas of national oil reserves that are to be opened.

Organized in 1906 to take over the oil interests of S. Pearson and Sons, which firm entered the Mexican field in 1902, this company's history coincides in large part with the history of commercial production in Mexico. The same year of its organization, the first year that oil production in the country reached a point of any commercial importance, it obtained a concession from the Mexican government under which the first refinery for Mexican oil was erected in Minatitlan, Veracruz. It is still known as the Compania Mexicana de Petroleo "El Aguila," the name under which it was organized, and is incorporated in this country where it is referred to generally as the Aguila (Eagle) for short. New office building for its administrative organization was recently completed in the heart of the city.

Eagle's Status in Poza Rica

The Mexican Eagle already has 18 producers in Poza Rica with a daily yield of 65,000 barrels, these wells being on land for which confirmatory agreements were already held. It is drilling on 30 other locations on land so held there. The government petroleum administration also has some producers in Poza Rica, its production being around 6000 barrels daily, according to unofficial reports. Most of the government drilling has been at Poza Rica though it has done some drilling in the famous Golden Lane of the South Tampico area.

All told, the Mexican Eagle has a daily production in Mexico of 95,000 barrels as compared to 160,000 barrels for all companies. Its production is divided by areas as follows: Poza Rica, 65,000 barrels; Isthmus of Tehuantepec, also largely a Mexican Eagle field, 27,000 barrels; North and South Tampico, 3000 barrels.

Huasteca Ranks Second

Second in production in the country is the Huasteca Petroleum Company, subsidiary of the Standard of New Jersey. Among its production properties are wells in North Tampico and the Golden Lane of South Tampico, or Tuxpam. Other American companies include the California Standard Oil Company of Mexico and the Richmond Petroleum Company, its subsidiary; Mexican Sinclair Petroleum Corporation, Sinclair Pierce Oil Company, Continental Oil Company, The Texas Company, New England Fuel Oil Company, a subsidiary of the Magnolia Petroleum Company; Mexican Gulf and others. Virtually all companies in the country are carrying on exploration work in the northeast part of Mexico.

Whatever may be the result of future exploration, however, oil men in Mexico point to Poza Rica and other areas in its section as a source of tremendous potentiality, enhanced by the fact that present production is oil of 70 percent gasoline content. Production is found at 7500 feet, the cost of completing a well being $55,000.

Second Richest Deposit

Poza Rica and the three other nearby areas included in the development agreement with the Mexican Eagle, are four of 12 areas in the general region, halfway between Tampico and Veracruz, known as La Papantla field and comprising 100,000 acres or more in extent that have been geophysically tested. British geologists, known for their conservatism, venture the opinion that it is the world's second richest oil deposit. Areas included in its boundaries, in addition to those named, are known as Pital Ymozutla, Escalin, Ojital y Potrero, San Miguel, Tlahuanapa, Papantla, Cerro Carbon and Chote. The areas of Poza del Cuero, Troncones y Potrerillo, and Fundo Legal de Coazintla are to the northwest of the Poza Rica area.

Among companies with important holdings in the area is the Mexican Sinclair Petroleum Corporation, with properties in Ojital y Potrero, between the Golden Lane area and Poza Rica. Estimated potential production of this area is placed at 500,000,000 barrels. Sinclair has one well down.

The Isthmus of Tehuantepec region, already one of the major producing sections of the country, is considered another potentially great field. The Mexican Eagle, with the heavy production there now, is reported to have spent $20,000,000 in exploration of the region from 1910 to 1918, and the Richmond Petroleum Company more than $1,000,000 in the search for oil. It was in this region that the government recently expropriated 350,000 acres.

Production to Increase

Production in Mexico will reach about 60,000,000 barrels for 1937, it is estimated, as compared with 41,000,000 in 1936, a yield of 40,000,000 in 1935, a total of 38,000,000 in 1934 and 34,000,000 in 1933. Of the 1936 yield, 25,000,000 barrels were exported.

The oil industry in Mexico pays in various ways about 7 percent of the government's income. Government income from mining, including gold, silver, lead and copper, is estimated at 35 percent to 50 percent of the whole. The income from all natural resources, direct and indirect, including capital export tax, is placed at a very high percentage of the government receipts, perhaps 75 percent to 80 percent. This includes income from fishing, hunting, salt, wood, ore, such as antimony, mercury, graphite, and the like.

The income from oil, a source which the government itself is planning to tap through its own petroleum administration in a much larger degree than heretofore, gives promise of enlarged volume with the opening of national oil reserves. Among items in illustration of the trend is the recent purchase by the government of three big drilling rigs. Two are in operation and arrival of the other in the country is due soon.

Shallow Depths One of the Lures of Western Kansas

SHALLOW depths of productive horizons is responsible for the popularity of Western Kansas as a crude oil source. Geological strata was so laid down that the Siliceous lime, most prolific and deepest of its production, is seldom found below 5000 feet. The other limes and the few sands that produce are much shallower.

A check of 100 of producing fields in Western Kansas reveals that 68 of them are drawing oil from levels between 3000 and 3500 feet. Even the Siliceous lime, which is just above the granite, is represented in numerous of these fields. There are only 22 fields with pay levels between 3500 and 4000 feet. Five fields produce from depths between 4000 and 4500 feet, leaving only two deeper than 5000 feet.

The area has more than 150 oil fields and the division as to depths for the whole area would run at the ratio shown by examination of depths of this 100. Thus, Western Kansas offers the attraction of the lower costs of comparatively shallow drilling.

Production is found, chiefly in lime formations, in Pennsylvanian, Devonian, Mississippian and Ordovician beds. Chief sources in the Pennsylvanian are Topeka lime, Kansas City lime, Oswald lime and the Reagan sand. The chat, also classified as a lime, is the only oil source in the Mississippian. The Hunton lime is the only producing member of Devonian age. Viola lime, Wilcox sand and Siliceous lime are productive from the Ordovician system. The first two of these yield oil in so few instances that the search of all wildcats is directed toward the Siliceous lime.

Shallowest depths of Siliceous lime production in Kansas is in the older fields in the eastern part of the state. The formation outcrops in western Missouri. A buried granite ridge in Butler County left the Siliceous lime shallower than 3000 feet, and resulted in prolific production from this formation in the Eldorado area. To the westward it is influenced by the Central Kansas uplift, where most of the development in Western Kansas has taken place. In the extreme western part of the state, this formation will not be found above the 5000 foot level. Wildcat ventures now starting in these counties as well as in Eastern Colorado have contract depths of around 6000 feet in order to assure reaching this lime.

Over parts of Western Kansas the chat, only producing member of the Mississippian rocks, is absent. In fact the Mississippi series is absent as a whole, leaving it out of consideration as a consistent oil source.

But the whole area offers possibilities in all the limes and the few sands of the Pennsylvanian series. The result is that Western Kansas fields are favored in some instances by production from two or more formations.

Low Costs Predominate

Since all these beds are shallower than 5000 feet, low cost drilling predominates. Aside from the footage charge of contractors, the area has other conditions favolable to low cost. The casing program is in favor of the producer. Protection of surface water sands and protection of the few deeper artesian water sources, leave it consistent to use but one string of surface pipe and the oil string as the casing program.

Absence of excessive gas pressures also contributes to cheaper drilling in Western Kansas. Except in the fields where gas predominates, it is not necessary to provide equipment for control of blowouts while drilling.

The area, however, does call for consistent use of acid in completing wells. Frequent treatment with acid followed by potential tests were responsible for the high potentials built for the fields. With the adoption of new proration rules, whereby wells will be declined in keeping with a composite decline curve, will remove the possibility of establishing higher potentials during the life of a well.

Other than chat wells, which usually flow their full output, pumping is required for the life of Western Kansas wells. Individual powers have been universally used until the early part of 1937, when a few producers began experimenting with central powers. A few of these are being introduced, especially in the fields which produce from limes with the depth range of 3000 feet to 3500 feet.

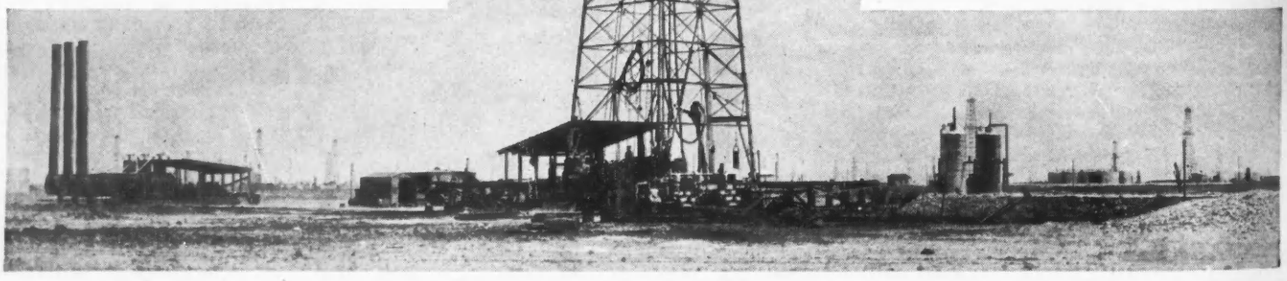
Pennsylvania hearings to start again in December

The Pennsylvania Oil Industry Investigating Commission was to resume its hearings December 4 at Pittsburgh, with another hearing scheduled for December 17 at Johnstown. Headed by Judge Ralph H. Smith and given a fund of $50,000 with which to carry on its work, the commission was created by the recent legislature to determine whether the state's oil industry, or any branch of it, should be placed under state regulation.

Two new economic advisers to the commission were appointed by Judge Smith last week. They are Edward Mason, of Harvard University, and Reavis Cox, University of Pennsylvania. They met with the commission's technical staff in Pittsburgh December 1 to plan for coming hearings. Others who attended the meeting were Dr. Samuel B. Ross, commission secretary; Glenn E. McLaughlin, Wilbert G. Fritz and Kenneth M. Snader, of Pitt University, and Marion Worthing, Pittsburgh Bureau of Business Research economist.

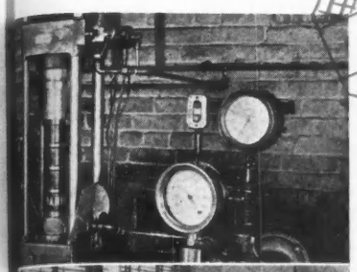
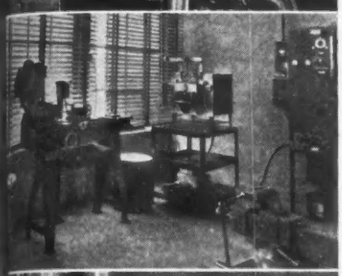
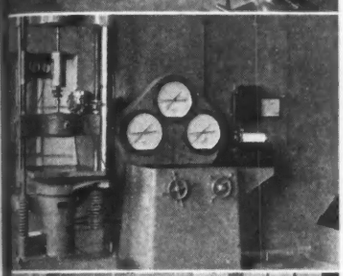
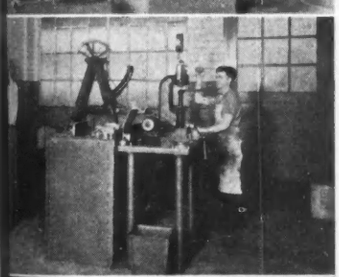
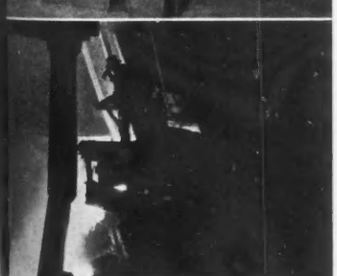
Dealers Ask Regulation

Meanwhile in Harrisburg, the Pennsylvania Petroleum Dealers' Association, holding a two-day meeting, prepared a brief to be submitted to Judge Smith asking a state control board for the gasoline industry. A. A. Fish, Philadelphia, president of the organization, and John Lamberti, Scranton, executive secretary, charged that oil producers exercise "absolute control" over the dealers and that state regulation was the industry's salvation.



Much of the drilling in Western Kansas, where 600 rigs are running, is the effort to gain extensions to pools. Here a typical rig for the area is going after an extension.

SCIENCE CONCERNS ITSELF WITH FRICK-REID CUSTOMERS

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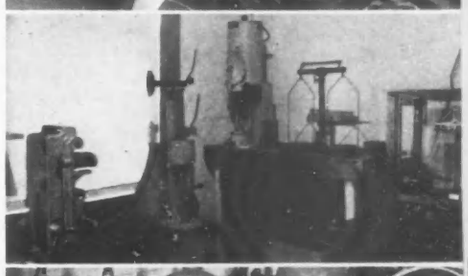
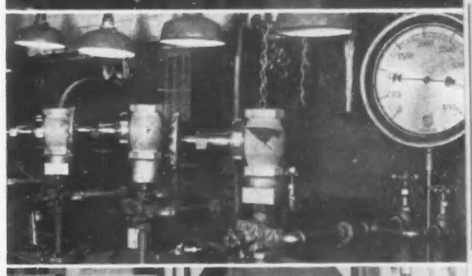

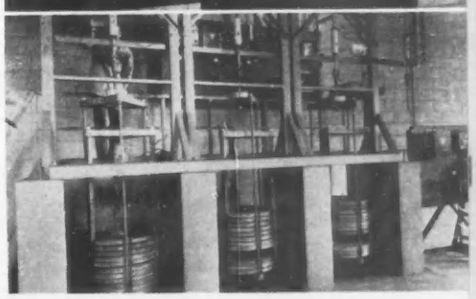

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OKLAHOMA FIELDS

Gulf's deep test in old Fox area is disappointing.

* * *

Thin sand makes poor showing in Cement area test.

Ardmore.—In the old Fox area of Carter County, Gulf Oil Corporation's Johnson 1, CSW NW 27-2s-3w, failed to produce. Tests were made in the deep Oolitic pay from which Carter Oil Company et al's Ruth Williams is producing and which opened the area more than a year ago. Johnson 1 was acidized with 2000 gallons and loaded with 350 barrels of oil. The acid was left in the hole for a short time and when opened, flowed 103 barrels of oil the first hour, 50 barrels the second, and after making 153 barrels the third hour began a sharp decline. It failed to recover 197 barrels of the load. The second test, with 6000 gallons, was allowed a longer set and had much the same results as the first, making a total of 204 barrels, but failing to recover the full load. The third and last test was with another 6000 gallons, but the well again refused to kick off, making only 35 barrels of oil, then going dead. It was preparing to drill deeper from the present depth of 7905 feet.

At Gulf's Smith Estate 1, CSW SW 26-2s-3w, same field, operators were reaming out core hole from 7738 to 7756 feet. The last core, from 7748 to bottom, had a seven-foot recovery consisting of lime with some saturation of gas and an odor of oil.

Another in Graham-Frederick Area

A new producer in the Graham-Frederick area of Tillman County was Indian Territory Illuminating Oil Company and Foster Petroleum Company's Dickey 1, NE SE SW 1-3s-19w, which flowed 260 barrels of oil in 17 hours December 1, and the following day, swabbed 70 barrels of oil in six hours and was estimated making 1,000,000 cubic feet of gas. The oil has a gravity of 39.

Another test is scheduled for the area, to be drilled to 3500 feet and located in Section 19-2s-18w. Contract has also been made for a test in Section 3-3s-19w.

In the Cement area of Caddo County, Indian Territory Illuminating Oil Company et al's Dome-Bo 1, CNE SE 29-6n-10w, had a good showing of oil in a core from 6063 to 6066 feet in sand with an 8-inch recovery. It was last reported coring ahead from 6080 feet. On a drill stem test at that depth, with packer set at 6048 feet, it was opened for 30 minutes and recovered seven stands of mud, the last four stands being cut slightly with oil. Very little gas was showing.

Opening a new small area south of the Konawa pool in Seminole County, Stanolind Oil & Gas Company, Amerada Petroleum Corporation and Mid-Continent Petroleum Corporation completed Salina 1, SE NE NW 4-5n-6e. The well made 100 barrels of oil and about 20 barrels of water daily. Production was from a plug-back total depth of 3214 feet in upper Hunton lime.

At the northwest end of the North Earlsboro pool of Pottawatomie County, Atlantic Refining Company's Billington 1, NW NE SW 12-9n-4e, after an acid test, was preparing to drill below 4229 feet in Hunton lime. Reports from the area stated the well had 1700 feet of oil in the hole at 4225 feet.

South of the Allen pool and in Pontotoc County, Magnolia Petroleum Company's Reed 2-A, SE NW NE 26-5n-7e, was shut in for tankage and pipe line connections after making 565 barrels of oil net in 5½ hours from a plug-back depth of 4070 feet in Hunton lime.

Oklahoma City Sector

The Texas Company's Roper 1, CW½ SW SE 22-15n-1e, in the southeast corner of Logan County, was last reported with 3000 feet of salt water in the hole, bottomed at 5458 feet in the Wilcox sand. The salt water came into the hole after plugs were drilled.

That a definite fault exists east of Moore pool in Cleveland County apparently was proven last week as Fain Drilling Company abandoned Greenlee 1, SWc NW 22-10n-2w. The test found the Wilcox sand at 7529 feet and drilled to 7482 feet with nothing showing.

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OKLAHOMA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARTER COUNTY—		
Shell, Hapgood 16, ne sw se sw 3-4s-3w (pb 1056)	6	1060
S. & D. Daube, Fee 30, sw sw se 14-4s-3w	8	1334
Pure, McCoy 41, ne ne nw 23-4s-3w	5	1301
E. M. Boring et al, Sullivan C. F. 1, se se sw 6-5s-1e	*	2504
COTTON COUNTY—		
J. W. Amyx, Ash 1, se se se 7-4s-10w	*	1262
COAL COUNTY—		
Continental, J. F. Wade 1, nw nw nw 7-1n-8e	217	4054
E. W. Whitney, Manahan 1-A, se se ne 10-2n-8e	*	2950
CREEK COUNTY—		
Big 4 Pet. Co., Cubby 3, sw se sw 19-17n-8e	¶3	1070
L. B. Jackson, Skeeter 1, nw nw ne 25-18n-9e	*	3352
Swift and Tulsa Oil Co., Pertisio 2, se nw sw 12-19n-9e	25	1205
Horton et al, McGuire 1, nw nw ne se 19-19n-9e	45	2473
GARVIN COUNTY—		
Skelly, Hinkle 3, se nw sw 32-1n-3w	46	3145
HUGHES COUNTY—		
Shepard & Thomas, Ball 1, ne sw se 12-7n-8e (pb 1015)	20	1100
JEFFERSON COUNTY—		
Hubbell & Wilson, Trout 1A, sw se se sw 19-6s-5w	*	2040
Circle Oil Co., Seay 56, nw se se sw 3-7s-5w	47	1271
Seay 58, sw ne se sw 3-7s-5w	69	1275
Seay 59, sw ne se sw 3-7s-5w	44	1097
Bridwell-Continental, W. D. Seay 8, nw ne ne nw 10-7s-5w	15	1262
KAY COUNTY—		
Wentz Oil Co., Andrews 3, nw sw ne 8-28n-1w	165	3530
LINCOLN COUNTY—		
Summitt Drlg. Co., E. H. Nickols 1, nw nw ne 2-14n-2e (pb 2074)	182	5080
Wilcox, Sac & Fix 5, sw ne sw 15-14n-6e	100	2990
OKLAHOMA COUNTY—		
Ohio, Messer 4, ne sw sw 32-14n-3w	701	6705
OKMULGEE COUNTY—		
Lease Inv. et al, Reneau, ne sw nw 4-13n-11e	200	3190
G. Steele, Anderson 1A, nw sw ne 34-14n-14e	*	1860
OSAGE COUNTY—		
E. O. Platter, 8, cne¼ se¼ 13-21n-8e	5	542
Magnolia, 3, ne nw sw 11-26n-6e	72	2884
PONTOTOC COUNTY—		
Clark Cowden, Mont. Pelier Trust 1, ne sw se 20-2n-6e	45	2986
Magnolia, Tom Norris 1, csw ne 25-2n-6e	¶70	1405
Wooley 9, se se se se 21-2n-7e	309	2625
Sinclair Prairie, McCarty 3, nw ne ne 22-2n-7e (pb 4053)	10	4054
Vivian 5, sw nw nw 22-2n-7e	493	3900
Moore, Schauers 3A, ne sw nw 29-2n-7e	27	2698
Brown 2, nw sw sw 34-2n-7e	313	4143
OSAGE COUNTY—		
I.T.I.O., 450, sw sw sw 32-26n-11e	¶2	1881
PONTOTOC COUNTY—		
Crabb-Craw, Brico 1A, se ne sw 3-4n-6e (pb 1118)	15	1124
F. Newson, Walker 3, nw sw nw sw 11-4n-6e	8	779
P. Boyle, Crist 2, se se sw 30-5n-4e	*	1390
SEMINOLE COUNTY—		
Francis, Cravens 2, sw se sw 13-5n-5e	132	2506
Stanolind-Amerada & Mid-Continent, Salina 1, se ne sw 4-5n-6e (pb 3104)	15	3317
Stanolind, Cully "B" 2, ne nw sw 12-5n-7e	149	4318
J. F. Smith, Narvell 2, ne se ne 32-7n-6e	493	2890
Pure, Reed 6, sw ne sw 14-8n-6e	175	4334
Crusaders, Stump 2, nw se sw 27-8n-8e (pb 4160)	376	4234
Stump 5, se se sw 27-8n-8e (pb 4035)	291	4194
Deep Rock, Coody 4, sw ne sw 9-9n-7e	*	3614
Amerada et al, Riddle 4, sw nw ne 2-10n-5e	392	4635
STEPHENS COUNTY—		
Magnolia, Cook 13, ne ne sw sw 30-1n-8w	*	1435

*Failures; †Junked; ¶Million cu. ft. gas.

KANSAS FIELDS

Rice and McPherson Counties get new pools.

* * *

Habiger and Cress pools given extensions

Wichita.—Kansas operators spent a busy and profitable week despite inclument weather which caused trouble in many areas. Two new pools were opened, and extensions made to two more.

In Rice County, near the southeast end of the central Kansas uplift, W. E. Witt et al's Fair 1, NW SE SE 4-22s-8w, drilled to 3344 feet in conglomerate and was flowing from 5 to 10 barrels of oil per hour. First showings of oil and gas were reported from 3339 feet. An increase was had from 3341 to 3344 feet. It was making approximately 1,000,000 cubic feet of gas.

Northeast of the Ritz-Canton pool, McPherson County, Doles-Park Development Company's Doles 1, NE NW SE 12-19s-1w, filled 1000 feet with oil in 5 hours from chat topped at 2850 feet. It was drilled to 2869 and was estimated making 1,000,000 cubic feet of gas. A show of gas was had from 2856 to 2860 feet and an increase in both oil and gas was had from 2862 to bottom. It is 4 miles from the Ritz-Canton oil and gas pool.

Kansan Oil Corporation's Mease 1, NE SE SE 27-30s-11w, in northern Barber County, was shut down for casing after finding a saturated core between 4442 and 4444 feet in chat. Top of the formation was at 4438 feet. The test is 8 miles north and slightly east of Medicine Lodge at the south end of the central Kansas uplift.

Skelly Oil Company's Zink 2, SE SW SW 32-17s-10w, extended the Habiger pool of Ellsworth County a quarter-mile east last week, flowing 1237 barrels of oil the first 4 hours through a 1-inch choke. The second 4 hours it made 1250 barrels of oil and 13,000,000 cubic feet of gas, with the final potential set at 7421 barrels. An east offset to the discovery well, Zink 2 was producing from between 2933 and 3016 feet in the Kansas City—Lansing lime. It was acidized with 6000 gallons before taking potential. The discovery well made a potential of 7604 barrels of oil.

Skelly Oil Company was rigging up rotary tools at Zink 3, NW SW SW 32-17s-10w, and Magnolia Petroleum Company's Zink 1, SWc NW SW 32-17s-10w, was shut down at 2994 feet.

A quarter-mile south extension of the Cress pool of Ellis County looks to be on the way at Sinclair Prairie Oil Company's Cress 1, NW SW SW 18-11s-16w, after recovering a saturated core from between 3411 and 3416 feet in Siliceous lime. The core also showed good porosity. Casing was to be run and standard tools rigged up before drilling in for a test.

East offset to the discovery producer in the Peterman pool of Barton County, Shell Petroleum Corporation's Leurman 1, SW NW SW 18-16s-13w, established a potential of 2678 barrels of oil, producing from 3374 feet in Siliceous lime. The formation was topped at 3352 feet. It flowed 446 barrels of oil the first 4 hours and 465 barrels the second 4 hours. At 3370 feet the well swabbed 10 barrels of oil per hour.

Northeast of Claflin, Sinclair Prairie Oil Company's Grossardt 1, NEc SW 10-17s-11w, at the southwest edge of the Kraft pool, established a pumping potential of only 294 barrels of oil and was to retake potential. Earlier in the week, after drilling to 3319 feet in Siliceous lime, topped at 3295 feet, the well swabbed 13 barrels of oil per hour for 8 hours. Following this it was acidized with 1000 gallons and pumped 30 barrels of oil per hour. Re-acidized with 3000 gallons, it produced 122 barrels of oil and 10 barrels of water the first 4 hours. During a second 4-hour period it produced only 49 barrels of oil and 20 barrels of water. Operators blamed mechanical difficulties for the poor showing and planned the new test immediately.

In the Kraft pool, Phillips Petroleum Company's Kraft 3, NW SE NE 10-17s-11w, swabbed 80 barrels of oil in 7 hours from the Siliceous lime at 3318 feet. It was acidized with 1500 gallons.

Mid-Continent Petroleum Corporation's Bixby 1, NWc 24-20s-16w, southeast of the Pawnee Rock pool of Pawnee County, had 4 feet of saturated recovery in a core from 3815 to 3820 feet in Siliceous lime and was running pipe. Bixby 1 is one mile from the pool which has two wells, both producing from the Siliceous lime.

Two other wells in the general area of the pool were going ahead. Stanolind Oil & Gas Company and Amerada Petroleum Corporation's Jantz 1, SWc 25-20s-16w, just south of the pool, which bailed to 3821 feet and found 10 feet of cavings in the hole. It was cleaned out and was plugging back five feet. Top of the Siliceous lime was at 3805 feet. Mid-Continent Petroleum Corporation's Smith 1, NWc SE 13-20s-16w, cleaned itself after plugs were drilled and the hole loaded with oil. It was estimated making 3,000,000 to 4,000,000 cubic feet of gas, but was shut in to install additional equipment. It was at 3770 feet in Siliceous lime, topped at 3762 feet.

Phillips Petroleum Company's Starkey 1, NW NE SE 16-30s-4e, in the Rock pool of Cowley County, cored from 2765 to 2770 feet in Bartlesville sand for a saturated core, indicating it might extend the pool to the northwest. Operators were running seven-inch casing before drilling in for a test.

The Texas Company's Schmidt 7, SWc NW 36-19s-11w, topped Siliceous lime at 3300 feet, drilled to 3329 feet and was plugged back to 3324 feet. It swabbed 5 barrels of oil and an estimated 50 barrels of water during the last 24 hours.

KANSAS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARTON COUNTY—		
Ohio, A. Brack 1, cnw¼ 20-18s-15w	¶56	3493
Stanolind, Wm. Panning 5, sw nw se 2-20s-11w (pb 3303)	1886	3305
F. Panning 9, nw nw nw 11-20s-11w	1362	3300
BUTLER COUNTY—		
Rex & Morris, Smith 1, cs½ se sw sw 34-25s-5e (pb 2568)	*	2604
Aikman & Bennett et al, C. Perry 2, e½ ne se 16-27s-4e	15	2476
National Ref., McCullough 3, se ne sw 1-28s-6e	394	3180
COWLEY COUNTY—		
Shawver, Fee 2, nw nw se 3-30s-4e	158	3820
Lloyd-Frost & Study, Elder 1-K, nw nw ne 4-32s-3e	15	2531
ELLIS COUNTY—		
Cities Service, Hall "B" 1, nw nw nw 26-11s-17w	1867	3399
GRANT COUNTY—		
R. K. Wilson, Whitson 1, center nw¼ 17-28s-37w	¶6.95	2685
GREENWOOD COUNTY—		
Superior, Jones 15, se ne sw 21-23s-13w	45	1719
Henderson Oil, Wilson 1, nw nw ne 8-24s-12e	*	1828
HARVEY COUNTY—		
Olson Drlg. Co., J. G. Schrag 1, nw nw ne 31-23s-3w	280	3358
MARION COUNTY—		
Laurioux et al, Merrilatt 5, se nw se nw 23-17n-4e (pb 2373)	45	2405
McPHERSON COUNTY—		
E. B. Shawver, Klassen "B" 2, nw se nw 21-19s-1w	247	3432
American Natl. Pet., Wadell 1, nw ne sw 12-20s-2w (pb 2993)	25	3002
RENO COUNTY—		
Olson Drlg., Querfeld 3, se ne se 27-23s-4w (pb 3400)	222	3618
RICE COUNTY—		
Stanolind, Manke 4, nw sw se 28-19s-10w	315	3265
Saco, Wickersham "A" 4, se se se 7-20s-9w	198	3314
H. B. Garden, Oden 8, sw se nw 5-21s-7w	772	3337
RUSSELL COUNTY—		
Mid-Continent, Letsch 3, se sw nw 26-14s-13w	2894	2903
Texon, Letsch 3, ne nw sw 26-14s-13w	1621	2923
Stearns & Streeter, Miller 6, sw ne nw 31-14s-13w	1640	3124
Central Pet., Foster "B" 10, se nw ne 3-14s-15w	1643	3322
Stanolind, W. Benso 18, sw nw sw 4-14s-15w	336	3078
SEDGWICK COUNTY—		
Continental, Westerfield 2, ne se sw 16-25s-1e	127	3338
Oehlert 1, nw nw se 7-27s-4w	*	4147
STAFFORD COUNTY—		
Stanolind, Paul Spangenburg 4, sw nw sw 29-22s-11w (pb 3579)	150	3585
Paul Spangenburg 3, nw sw sw 29-22s-11w	249	3582
Fred Rust et al, Drach 1, ne ne sw 12-22s-13w	945	3705
STEVENS COUNTY—		
Panhandle Eastern, McClure 1, center sw¼ 34-31s-38w	¶10.5	2776
Benedum & Trees, Hamilton 1, center se¼ 10-35s-38w	¶5.33	2835
SUMNER COUNTY—		
Cities Service, McCoy 1, se se sw 11-35s-2e	*	3925
TREGO COUNTY—		
Thurman-Hill et al, Lawson 1, sw sw sw 7-14s-22w	*	4398
WOODSON COUNTY—		
F. Young, Mudge 2, se nw ne 5-24s 14e	63	1728

*Failures; †Junked; ¶Million cu. ft. gas.

EASTERN FIELDS

Illinois wildcat initials 200 barrels per hour.

* * *

Dry hole dampens hopes of Madison Township field.

* * *

Clermont stakes offset to Thanksgiving discovery.

Olney, Ill.—With production estimated at 1700 barrels a day, Mammoth Oil & Refining Company's Brace-McCauley 1, wildcat in Section 28-3n-9e, Decker Township, Richland County, two miles south of Noble, kicked off at the rate of 200 barrels the first hour while being swabbed in from McClosky producing horizon with cable tools. It opens a new area that will offer further inducement for immediate drilling. The company has 1100 acres under lease in the vicinity. The wildcat has been shut in pending erection of storage tanks and completion of a pipe line to the well.

Swabbing failed to bring in Pure Oil Company's S. S. Gill 1, Section 27-2n-8e, Zif Township, Wayne County, but acid treatment given last week-end caused it to start flowing. A second treatment is to be given, operators believing the excellent saturation as shown by a core indicates it will be one of the best producing wells in the area.

Two wildcats west of the Clay-Richmond-Wayne County area of the basin were plugged Monday. Carter Oil Company, which was expected to probe the St. Peter formation with H. Pruener 1, Section 11-8n-7e, St. Francis Township, Effingham County, abandoned the test at 2600 feet after coring from 2400 feet with no showing of oil. Huber Drilling Company's Charles Kuntz 1, Section 11-6n-5w, Shoal Creek Township, Bond County, struck salt water in the St. Peter. Total depth was 3102 feet.

Madison Township Fails

Hopes of adding Madison Township to Richland County's proven area faded when Wiser Oil Company abandoned J. H. Trevett 1, Section 8-2n-10e, which was dry to 3200 feet.

Rapid progress was being made on three tests in other new Richland County areas: Patton et al's W. H. Farris 1, Section 18-3n-10e, Olney Township, was drilling below 2000 feet, while Hollingsworth Inc.'s A. Wagner 1, Section 5-3n-14w, Claremont Township, and Kingwood & McMahon's Negley 1, Section 31-5n-9e, Denver Township, were both drilling below surface pipe, having spudded in a week ago.

Texaco Gets Started

The Texas Company spudded in its first Illinois basin test last week on the Goudy farm, Section 16-3s-7e, Wayne County. It is two miles north of J. G. Buell's Dickey 1, Section 22-3s-7e, Beaver Creek Township, Hamilton County, which was plugged a week ago.

In Knox County, Ohio, Clermont Oil & Gas Company is moving in material for a test on the Robert Rice lease 600 feet south of its J. B. White 1, which came in Thanksgiving day with an initial open flow of 2,500,000 cubic feet a day. The White well, which is the company's first test, was bottomed at 2807 feet, seven feet in the Clinton sand.

In the New York-Pennsylvania deep sand gas field, Hanley & Bird completed a test on the J. Lobeck farm, Woodhull Township, Steuben County, on the New York side, at 4122 feet, for an initial open flow of 22,600,000 cubic feet, with initial rock pressure 1630 pounds. Oriskany sand was topped at 4110 feet. On the Pennsylvania side, Potter Development Company, on the way for a test of the Medina formation with its wildcat on the Crawford farm, Keating Township, Potter County, installed a rotary rig in place of the cable tools which were used to 6062 feet.

Drilling operations in the old Allegany fields, New York, continued to decline during November, with a survey of operations at the end of the month showing only 28 active tests. Recently reduced crude prices and colder weather were factors in the slump. As usual, Messer Oil Company led operations in the area, with six tests drilling as the month closed. Other companies active, and the number of tests drilling, were: Bradford Producing Company, 1; Andrews Brothers Oil Company, 1; Bradley Producing Corporation, 2; Karl Oil Company, 1; Chris Oil Company, 1; N. V. V. Franchot, 2; Homestead Oil Company, 1; LaMont Oil Company, 1; Moore Producing Corporation, 1; Pure Penn Petroleum Company, Inc., 1; Sawyer & DeFusto, 1; Sloan & Zook, 5; Willetts & Paul, 1; Tress Oil Company, 1; The Genessee Oil Company, 1; and Gorton Brothers, 1.

State College gets $50,000 for oil production research

Approximately $50,000 will be spent in production research at Pennsylvania State College during the next biennium. The work will be financed with funds supplied by the Pennsylvania Grade Crude Oil Association, a number of Bradford producers, and the state. The association's participation in the program has been doubled, $4,800 having been appropriated for this work during the next year.

Dr. A. W. Gauger, of the School of Mineral Industries of the college, said the funds being made available will make it possible to carry on comprehensive research on the economical production of crude oil. Experiments on air-gas and water flood recovery methods will be continued. The groundwork of the air-gas program was laid during the last 18 months by Dr. Harry M. Krutter, who became affiliated with the college research staff at that time, and his analytical methods have been perfected to a point where practical results may be expected within the next few steps.

"We believe the coming year's work in the laboratories at State College will give us a program designed to maintain our long-view efforts on a broad front," said J. E. Moorhead, executive secretary of the association, in commenting upon the organization's participation in the program.

"We believe that the money contributed by the association's membership is being spent to give them a maximum return. Pennsylvania oil men have long been convinced that they must meet emergencies by concerted action in wise expenditure of money for research."

EASTERN FIELDS
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ILLINOIS		
CLAY COUNTY—		
Pure, W. H. McKinney 1	175	3026
Chaffin 4	75	3000
Chaffin 5	100	2987
Geo. L. Travis 1	*	3015
CLINTON COUNTY—		
Gross, Erling & Murphy, B. Eversgard 1	*	972
FAYETTE COUNTY—		
Belcher et al, John Crawford 1	*	1609
MARION COUNTY—		
T. R. Roberts et al, Geo. Purcell 1	9	1455
Roy Benoist, Belch 1	*	1575
RICHLAND COUNTY—		
Pure, C. L. Wilson 1	520	2977
Frost 1	85	3098
W. F. Lacy, C. A. Galloway 1	415	2964
OHIO		
ASHLAND COUNTY—		
Ohio F. G. Co., Sarah Fritz 1	*	2864
BELMONT COUNTY—		
Barnsville Dev. Co., Anton Doerak et al 1	*	1713
LICKING COUNTY—		
Rutledge & Mossholder, T. Moran 3	110	3100
Wehrle Gas Co., G. D. Orr 1	87	3000
LORAIN COUNTY—		
Ohio F. G. Co., S. Mesaros 1	¶1.10	2553
MEIGS COUNTY—		
Proffett et al, L. Lane 2	¶.26	2050
Mayer et al, Georgia Williamson 3	*	800
MONROE COUNTY—		
N. T. Stout, Jane Jackson 2	2	1395
MORGAN COUNTY—		
Kepple et al, J. A. Carle 2	¶.40	942
C. P. Bowman, C. Woodyard 1	¶.10	1576
NOBLE COUNTY—		
Metcalf, C. H. Masters 11	2	948
Chaserville O. & G. Co., Ira J. Fulton	¶	1497
Barnsville Dev. Co., Mary E. Hunt 1	¶	1558
John Bindas, C. H. Law 1	*	1800
PERRY COUNTY—		
Ohio F. G. Co., Blanche Yarger 1	6	3030
Perry Sturm et al, F. W. Arnold 2	*	876
WASHINGTON COUNTY—		
Homer Newhart et al, B. W. & C. Rinard 2	5	1741
Best Run O. & G. Co., John Martin 1	¶.18	1085
Otto Heldman et al, Sparling Heirs 1	¶.04	2100
Hanlon et al, Henry Fry 1	¶	1563
F. M. Russell et al, J. J. Lorenz 4	*	695

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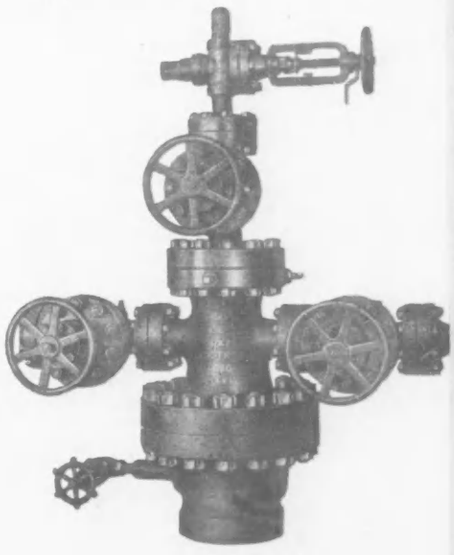

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Moreover, the strong, all-steel design, the accurate control, simplicity and ease of dismantling all combine to assure an economy and continuity of service that will satisfy the most exacting demands throughout the oil fields.

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KEROTEST MANUFACTURING CO.

PITTSBURGH, PENNA.

Company, Well and Location	Init. Prod. Bbls.	Depth
WEST VIRGINIA		
BRAXTON COUNTY—		
Pittsburgh & W. Va. Gas Co., Parkersburg Mills 7633	*	2639
CABEL COUNTY—		
Zihlman Gas Co., F. R. Zihlman 1.	¶.21	2917
CALHOUN COUNTY—		
Great Elk Oil Co., S. Bauchman 35	5	1856
F. F. McIntosh, J. R. Lockney 1 ..	¶.04	2308
Chemical O. & G. Co., A. L. Yoke 2	*	2510
GILMER COUNTY—		
Bush & Ferrell, Blanche Reed 1 ...	¶1.00	1773
Carnegie Nat. Gas Co., Kenawha Union Bank 1	¶	2064
KANAWHA COUNTY—		
United F. G. Co., C. T. Tolley 4758	¶17.69	4837
Godfrey L. Cabot, Inc., Katherine B. Jarrett 1	¶14.70	4781
LEWIS COUNTY—		
McCall Drlg. Co., Laura Alfred et al 1	¶.34	2105
LINCOLN COUNTY—		
United F. G. Co., J. T. Morrison 4773	¶.12	3721
Brown Gas Co., Millard Pratt 3 ...	¶.11	1887
Stone Branch Gas Co., Nancy Madden 1	¶.09	3220
MARION COUNTY—		
Owens ILlinois Glass Co., R. C. Brock 2	¶	2904
PLEASANTS COUNTY—		
H. P. McGinnis & Co., J. H. Farson 1	¶.02	970
RITCHIE COUNTY—		
J. F. Deem, McGregor Heirs 3	¶.50	1800
Reno Oil Co., B. F. Moore 5	¶.10	2050
ROANE COUNTY—		
American O. & Dev. Co., O. Conley 1	3	1625
Injun Oil Co., Rozella Drake Heirs 2	¶.06	1610
WAYNE COUNTY—		
Burgess O. & G. Co., A. C. Toney 1	¶1.04	3231
Mountaineer Gas Co., O. Adkins 2..	¶.15	3485
WIRT COUNTY—		
Shore Oil Co., Laura Mayle 3	*	508
WOOD COUNTY—		
South Penn Oil Co., M. McPherson 6	10	2242
KENTUCKY		
BRECKENRIDGE COUNTY—		
Kentucky Nat. Gas Co., W. J. Robinson 5	*	....
J. C. Ellis, Albert Decker 2	*	480
DAVIESS COUNTY—		
Rex-Pyramid Oil Co., Joe Brown 1.	¶.40	630
FLOYD COUNTY—		
Kentucky-W. Va. Gas Co., Jennie Caldwell 534	¶.21	2622
HANCOCK COUNTY—		
J. C. Ellis, L. Richards 21	100	290
C. D. Walker, Elmer Boling 2	¶.14	552
HENDERSON COUNTY—		
Black Gold Oil Co., C. M. Gish 11	100	....
LEE COUNTY—		
McCoun & Wissing, Andrew Combs 6	200	1154
Thomas Whittmer, C. J. Tipton 5..	100	400
C. G. Mays, M. S. Cole 10	75	964
Petroleum Exp. Corp., Pripe Heirs 16	5	....
Brener & Adams, H. C. Johnson 1	5	870
OHIO COUNTY—		
Barney Calvert, N. R. Baize 6	¶.07	435
Weir & May, Ollie Bashem 2.....	*	590
Mrs. Rawlings, W. King 4	*	725
Cox & Lang, Robt. Armes 1	*	632
J. B. Mayers et al, Tom Hamilton 4	*	....
PENNSYLVANIA		
GREENE COUNTY—		
Equitable Gas Co., Abijah Ross 1558	¶.65	2826
O. I. Dille, M. Phillips 1.....	¶.30	2840
POTTER COUNTY—		
G. L. Cabot, Inc., R. Johnson 1....	¶6.00	5245
French et al, Mary Webster 1.....	*	400
BUTLER COUNTY—		
Geo. L. Yates & Co., United Presbyterian Orphanage 2.....	25	1600
WASHINGTON COUNTY—		
Carnegie Natural Gas Co., N. B. Redd 4	1	2633
Dunn Mar Oil & Gas Co., J. T. Baldwin 4 .	10	2971
NEW YORK		
ALLEGANY COUNTY—		
G. L. Cabot, Inc., Thomas Murphy.	¶8.40	4721
Fairman et al, C. Wilson 1.....	*	4991
STEUBEN COUNTY—		
G. L. Cabot, Inc., C. Groves 1.....	¶3.70	4186
STEUBEN COUNTY—		
Hanley & Bird, J. Lobeck 1.....	¶22.60	4122

*Failures; †Junked; ¶Million cu. ft. gas.

ROCKY MOUNTAIN FIELDS

Forecast heavy winter drilling to protect permits.

* * *

Deep East Lance Creek test to plug back to Dakota.

Casper, Wyo.—It is expected that an unusual rush of new drilling for this time of the year will take place in the Rocky Mountain area on federal permits as a result of government regulations calling for the drilling of wells to 2000 feet plus to protect permits for two more additional years until December 31, 1940. Deadline for complying with the regulations is December 31.

In the Middle Baxter Basin area three tests are underway. Mountain Fuel Supply Company is rigging up rotary for Betty Hoyt 1, CSW SW SW 32-19n-103w, and for E. S. Lauzer 1, CNW NW NW 30-18n-103w, while the Rocky Mountain Drilling Company is waiting on cement to set around the 12½-inch surface casing at 300 feet in Osborne 1, SE SE SE 12-18n-104w.

On the Bunker Hill gas structure, Carbon County, Ohio Oil Company this week completed Clarence A. Brimmer-Government 1, CSE SE SE 30-27n-89w, a failure at 2010 feet. The well passed through the Shannon sand, normally gas bearing at Bunker Hill, where it picked up water at 1691-1749 feet, and drilled ahead to below 2000 feet. The company is moving equipment to George E. Brimmer-Government 1, CSW SE 32-27n-89w, to drill another test to or below 2000 feet.

The past week Superior Oil Company's Christensen-Government 1, W NW 7-12n-92w, missed production in the Wasatch beds and went out of the formation at 1450 feet, but drilled on to 2080 feet to protect this permit on the South Baggs structure, Carbon County, Wyo.

Continental Oil Company's Leach 1, SW NE NE 29-36n-64w, deep test of the East unit block of Lance Creek, Niobrara County, eastern Wyoming, is coring in dry sand in the basal Minnelusa at 6350 feet. It is reported that the well will plug back to the Dakota sand for a production test. The well had comparatively good oil and gas shows there.

On the east flank of the Lance Creek field proper, Ohio Oil Company is making pumping test of Leo OPC-7, NWc NW SE 35-36n-65w, outpost in the Minnelusa formation. Well pumped 80 barrels of fluid, mostly water, in 10 hours and apparently defines east limits of the Minnelusa pool. Depth is 5264 feet, base of the middle sand.

Another definitive Lance Creek test on the northwest flank at critical stage is J. M. Huber Corporation's Midwest 2, NE SE SW 27-36n-65w, drilling plug with the 7-inch production string set on top of the Minnelusa formation at 5410 feet.

Twenty-one miles east of Casper on the Cole Creek structure, Wyoming's most interesting wildcat, General Petroleum Corporation topped the Shannon sand at 4555 feet and cored slight shows of oil and gas in Government 1, NW NW SE 21-35n-77w. This places its objective, the Wall Creek sands, at around 6600-6900 feet. These sands are the reservoir for the main light oil production in two of Wyoming's largest light oil fields, Salt Creek, 30 miles north, and Big Muddy, nine miles south The test located out from the rim of the Powder River Basin will, if commercial, give a strong stimulus to deep testing within the Powder River Basin, where 11 other drilling blocks have been assembled.

Deep Test For Wertz

Sinclair-Wyoming Oil Company is moving in rotary for its third deep test of Wertz field, Carbon County, Wertz 12-B, SWc SE NW NW 7-26n-89w. The discovery well completed a year ago in the Tensleep for 1850 barrels daily and the second test completed a week ago made 285 barrels daily. For a number of years Wertz field has produced gas from Dakota and Sundance sands.

Resolute Oil Company's Government 1, CNE NE 20-57n-101w, deep test in the Badger Basin field, Park County, northern Wyoming, has shut down temporarily at 8670 feet after missing production in the First Frontier formation. The well may be drilled to the Dakota.

Location at Cut Bank

The first well spotted since overproduction became a menace to northern Montana operators late in September was made in the Cut Bank area this week. Glacier Producing Company's Reynolds 1 is in NW SW SE 15-36n-5w, an important outpost located in the gas area, six miles northeast of nearest oil production.

In the area midway between the Kevin-Sunburst and Cut Bank field two wells were spotted this week which may point toward the joining of the two major oil pools of northern Montana. Both wells, which are spudding, are Grant, Charles, et al's Anderson 1, SE NE NE 26-35n-4w, and West Kevin Community Lease, Inc.'s Government 1, NE NW 3-34n-4w.

MOUNTAIN STATES Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MONTANA		
TOOLE COUNTY (Kevin-Sunburst Field)—		
Wm. McKnight, Gunderson 4, ne ne nw 19-35n-2w	150	1605
Ohio, Sunburst O&G Co. 2, cne ne 12-32n-2w	¶2	1250
C. L. Tomlinson (Agent), Davidson 1, nw ne se 28-35n-3w	*	1750
UTAH		
DAGGETT COUNTY (Clay Basin Field)—		
Mountain F. S. Co., Keith Smith 1, sw ne 20-3n-24e	¶21	5674
WYOMING		
CARBON COUNTY (Medicine Bow Field)—		
Ohio-California Co., Wm. Kyle 3-A, sw ne 26-21n-79w	240	5733
(South Baggs Structure)		
Superior, Christensen 1, nw nw 7-12n-92w	*	2080
SWEETWATER COUNTY (Cherokee Ridge)—		
Mountain F. S. Co., W. L. Williams 1, ce ne 5-12n-95w	*	5680

*Failures; †Junked; ¶Million cu. ft. gas.

NORTH AND WEST TEXAS

Three major extensions for K-M-A appear likely.

* * *

Majors seeking foothold in play for Strawn oil.

Wichita Falls, Texas.—Three major extensions appeared promising for production limits of the K-M-A field, southern Wichita County, towards the close of last week. Oil saturation in the Strawn sandy-lime section was registered by the cores pulled from these outposts, and operations were halted to cement pipe on top of the lime before changing to cable tools to drill in and test for production. New developments confirm earlier reports that this 3900-foot high gravity oil area will become the largest single field in the North Texas district. Operators are forecasting from 30 to 50 square miles of productive territory, with ample acreage already proved to support a major drilling program for a long period.

Lease Prices Soar

Majors and substantial independents are seeking a foothold in the face of rising lease prices, resulting in the greatest concentration of geologists and land men in this seasoned oil capital in more than a decade. Opportunities to participate in the pending drilling boom without paying inflated prices for lease protection are fading rapidly. Demand for leases has caused buyers to step out beyond production and speculate on further expansion of the field.

7½ Miles Wide

Width of the field in an east to west direction will be enlarged to 7½ miles if two of the prospective extensions recorded the past week make commercial producers. Consolidated Oil Company, Rhea Howard et al's W. P. Ferguson et al 1, located near east line of the W. H. Spillers Survey, A-257, and more than one mile west of Jack Kadane et al's record producer on the Mangold land, cored oil sand at 3706-10 feet and is running pipe to test. Top of the big lime was logged at 3649 feet, or about level with the Mangold producer, which flowed 2086 barrels of 44 gravity oil natural through casing in 12 hours from sand at 3705-52 feet, with an elevation of 1026 feet.

E. C. Norwood et al's W. P. Ferguson 1, northeast corner of Lot 4, F. Peterswick Survey, A-343, Archer County, and 6800 feet south by west of the Mangold well, showed saturation in broken sandy-lime at 3811-46 feet after logging top of the big lime at 3727 feet. Seven-inch pipe has been cemented at 3711 feet. It is ¾ miles northeast of C. A. Everts et al's Kemp-Kempner 1-a, abandoned in October, 1934, after testing salt water at 3970-79 feet, with "few gallons" of oil showing when saturated lime at 3893-3906 feet was treated with 2000 gallons of acid injected under 1400 pounds pressure. Everts et al's first test was junked while trying to test through casing after drilling to 3912 feet.

Extended East

Advance of the field to the east materialized when E. J. Stump et al's M. P. Bishop 1, southeast corner of W½ of L. Netherly Survey, A-240, cored saturated lime at 3885 feet, with an elevation of 1025 feet. Pipe was ordered set after pulling a short core. Top of lime was logged at 3795½ feet, corrected measurement, or 2770½ feet subsea. Bishop 1 is 10,000 feet south by east of Clyde-Texan Oilfields Company's Burnside 1, a pumper, and 13,000 feet southeast of Grace & Wood's Hodges 1, rated at 300 barrels initial after nitro shot at 3909 feet. Burk Royalty Company et al's Hodges 1, half mile south of the latter producer, logged top of lime at 3746 feet, and cemented 7-inch pipe at 3752 feet.

NORTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
Golding & Cochran, J. M. Kunkel 5, lot 8	40	1146
D. S. Johnson et al, L. G. Williams 1	*	833
H. D. Lyon et al, J. H. White 1, blk 42	*	1614
J. T. Miller et al, Oil Inv. Co. 2, blk 125	*	1246
CLAY COUNTY—		
Walter H. Gant et al, C. M. Worsham 2, sec 38	50	3800
C. M. Worsham 5	52	3904
COOKE COUNTY—		
Hester Oil Co., R. W. Trew 6	15	1615
Trumter Oil Co., Andress 14	40	803
Andress 8-A	45	792
JACK COUNTY—		
W. R. Dearing et al, S. M. Jones 9	200	3228
MONTAGUE COUNTY—		
O. V. Beck et al, C. L. Davenport 13-A	*	2007
Bridwell Oil Co., M. H. Salmon 11-A	60	1638
M. H. Salmon 12-A	20	1016
WICHITA COUNTY—		
L. T. Burns et al, 1st. Nat'l Bank 19, blk 27	300	3830
W. H. Hammon, Hanlon & Buchanon, Inc., A. F. Fassett 1, sec 1	175	4018
LeBus Bros. et al, G. W. Lewis 1, blk 20	500	3785
Petroleum Producers Co., 1st. Nat'l Bank 80	576	3831
Ed. Schlaffke et al, Fassett- Tuttle 8	*	890
YOUNG COUNTY—		
F. H. Clarida et al, Mrs. F. E. Clarida 1	*	612
The Texas Co., Nora Finch 13-B, sec 40	45	680
Wootten & Wilson, J. K. Jeffery 2, sec 45	*	749

*Failures; †Junked; ¶Million cu. ft. gas.

King's Mitchell 1 High

King Oil Company's T. F. Mitchell 1, southeast corner of Lot 25, P. Castleman Survey, A-36, and adjacent to the north bank of the Big Wichita River, flowed 50 barrels hourly natural from oil sand and sandy-lime at 3700-3823 feet. Top of lime was called at 3620 feet, or 2621 feet sub-sea, revealing a high structural position. This well is the third flowing producer north of the stream, which is destined to receive a large quota of deep tests. Toddie L. Wynne, trustee, (Golding-Cochran et al) assumed a 15-day commencement obligation in purchasing lease on 145½ acres of the Waggoner Bros. land, embracing Lots 30 and 36, H. George Survey, A-454, for $250 per acre, including 50 percent cash and balance payable from production. Location has been made in the southwest corner of Lot 36, about 1⅓ miles northwest of the King Oil Company's Mitchell 1.

Structurally high Wasson wells showing cut oil

Midland, Texas.—Presence of an irregular water table in the Gaines County section of Wasson field was further emphasized the past week when two wells in process of completion on the south edge of the proved area showed cut oil at comparatively high points on the structure.

Shell Petroleum Corporation's Cox 1, NEc Section 380, swabbed 8 barrels fluid hourly, testing 95 percent water, from lime at 4995 feet, or 1458 feet sub-sea. It has been plugged back 25 feet to use acid. A diagonal northeast offset missed the water in completing at 1465 feet sub-sea.

Humble Oil & Refining Company's Riley 1, NEc Section 381, showed five percent water in registering a potential flow of 260 barrels after using 7000 gallons of acid at 4995 feet. Sub-sea depth is about 1440 feet. Amon G. Carter et al's Brand 2, NEc S½ Section 54, on a line between the two most westerly wells, both pumpers, failed to respond to the first acid treatment at 4995 feet.

An intermediate test for the Wasson and Seminole areas and along a 15-mile trend that is popular with the large companies is to be drilled by F. Boren, Charles Everst et al on the T. H. Sneed tract, SW W. T. Ry. Section 282, Block G. Owners of short term leases in this area have pledged cash and acreage donations towards the project.

Wildcat Gets Salt Water

Continental Oil Company's Jones 2, western Gaines County wildcat, filled 1200 feet with salt water in big lime at 4906-08 feet, with an elevation of 3632 feet, and deepened to sulphur water. A small show of gas was logged at 4825-29 feet, followed by an oil trace to 4835 feet.

The fourth test for Bohago pool, Yoakum County, is slated for the early part of 1938. Bohago Oil Corporation and Bond Oil Corporation have obtained donations for the drilling of a

5500-foot test on the West land, SEc SE Section 607, Block G. Previous operations in this deep lime pool have been somewhat disappointing. Skelly Oil Company and Sun Oil Company's Kiser 1 failed to exclude bottom hole water in plugging back from 5300 feet, or 1643 feet below sea level, to 5279 feet. Completion of an oil producer is doubtful.

The interval between Pecos Valley field, Pecos County, and the scattered production in southeastern Ward County was shortened through completion of a flowing well in C. C. Dorr et al's Payton 1, H&GN Ry. Section 99, Block 8, Pecos County. This semi-wildcat flowed 100 barrels daily by heads from sandy lime at 1980-2033 feet, with an elevation of 2439 feet.

WEST TEXAS Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
CRANE COUNTY (Sand Hills)—		
Gulf-Cranfill Bros., J. B. Tubb 13..	531	4420
Gulf, W. N. Waddell et al 3.....	†	4803
ECTOR COUNTY (Foster)—		
Cities Service, J. E. Bagley 3.....	892	4251
ECTOR COUNTY (Goldsmith)—		
Amerada, H. E. Cummins 3.....	564	4253
Atlantic, J. D. Slator 2.....	588	4300
W. H. Dunning Estate, C. Scharbauer 3-A 1668		4226
Gulf, C. A. Goldsmith 51.....2268		4210
C. A. Goldsmith 54.....3597		4215
Humble, W. F. Cowden 8 1155		4267
Landreth Prod. Corp., C. Scharbauer 1-N 507		4185
Phillips-Pure, C. Cowden 17.....2924		4155
T. P. Coal & Oil Co., C. Scharbauer 9 2464		4245
ECTOR COUNTY (Harper)—		
L. H. Wentz et al, J. E. Parker 1-D 822		4245
ECTOR COUNTY (North Cowden)—		
Landreth-Phillips-Tide Water, Holt 5 442		4219
Sinclair Prairie, M. Glass 2.....	406	4348
Stanolind, J. M. Cowden 60.....	632	4230
FISHER COUNTY (Rotan)—		
Snowden & McSweeney Co., S. Howard 1	742	3517
FISHER COUNTY (Wildcat)—		
C. A. Everts Drl. Co., M. A. Taggart 1	*	3809
GAINES COUNTY (Seminole)—		
Amerada, S. J. Averitt 1.....	450	5035
HOWARD COUNTY—		
G. H. Johnson & Bruce, Hyman-Magnolia 2-C	500	2906
Sinclair Prairie, Texas Land & Mtg. Co. 6	413	2885
PECOS COUNTY (Pecos Valley)—		
M. H. Black et al, Pecos Valley Oil Co. 5.....	25	1595
W. H. Street & Knight, Pecos Valley Oil Co. 2.....	74	1645
Union Oil & Mining Co., Magnolia 2-A	541	1868
PECOS COUNTY (Torborg)—		
Cardinal Oil Co., M. A. Smith 19-A	96	361
P. Childress Roy. Co., Smith-Cinco 25	*	400
STONEWALL COUNTY—		
Gen'l. Crude Oil Co., B. F. Harrison 1	*	3680
UPTON COUNTY (McCamey)—		
Acme Oil Co., Shirley-Conoco 1....	325	2176
Gulf, J. H. Shirk 14.....	792	2311
Pure, E. S. Hughes 7.....	504	2564
Texas Co., R. King 35.....	341	2409
WARD COUNTY—		
Culbertson & Irwin, Inc., John Sealy 2	500	2729
Gulf, E. W. Estes 63 1104		2650
E. W. Estes 66.....1501		2670
Hutchings 90.....	268	2720
G. W. O'Brien 88	676	2770
A. E. Lynch et al, Himmell 7-A....	362	2536
Richardson Oils, Inc., W. D. Johnson-Sun 5-A	376	2921
Standard (Tex), I. B. McFarland 20, sec 37	563	2617
Standard-Atlantic, McFarland 5, sec 29	80	2640
WINKLER COUNTY (Henderson)—		
W. K. Royalty Co., J. B. Walton-Humble 2-D	320	3070
WINKLER COUNTY (Kermit)—		
Humble, N. R. Colby 22-C.....1121		3075
Shell-Texas Co., E. P. Cowden 2-B. 204		3015
T. P. Coal & Oil Co., E. M. Wahlenmaier, Duval Roy. Co. 3.....1065		3090
YOAKUM COUNTY (Wasson)—		
Denver P&R Co., Whittenburg Est. 1-A	561	5084

*Failures; †Junked; ¶Million cu. ft. gas.

Delaware and Ordovician Disappoint

Prospecting in the Delaware and Ordovician horizons in West Texas registered adverse results the past week. The greatest disappointment occurred in Sand Hills field, Crane County, when Gulf Oil Corporation's W. N. Waddell et al 6, C NE SW of PSL Section 4, Block B-27, quarter mile west of the largest Ordovician producer in the district, filled 360 feet with sulphur water in one hour through a formation tester from Ellenberger at 5852-6112 feet. Hole was deepened to 6116 feet, and the well flowed 200 barrels water hourly. Top of the Simpson, or middle Ordovician, was called at 5820 feet, and top of the Ellenberger at 6071 feet, with an elevation of 2549 feet. The latter marker placed Waddell et al 6 about 111 feet lower on structure than the offset, which earned a potential rating of 8179 barrels of 45 gravity oil natural from Ellenberger at 5956-5971 feet, with an elevation of 2545 feet. Previous tests drilled to the Ordovician proved the zone erratic.

Showdown Deferred

A showdown on the ability of the Ordovician to produce about 11½ miles south by east in northern Pecos County is to be deferred on Magnolia Petroleum Company et al's McKee 1-a, H&GN Ry. Section 24, Block 9, until curative work is completed on the large drilling block. McKee 1-a entered the Simpson section at 4775 feet, with an elevation of 2385 feet, and shut down November 4 at 4914 feet to enable the company to add to its block. The hole later was deepened to 4928 feet, and recovered cores were void of oil saturation, according to reports. However, the presence of an unusually high Simpson lime top makes the area a good bet for deep production, thus accounting for the big turnover of leases and royalty interests in the general area.

TEXAS PANHANDLE Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
L. R. Hagy, Marsh & Harrington, Sam Bednorz 4 .....¶10.8		2726
GRAY COUNTY—		
Cities Service, A. J. Culler 13.....	406	3260
I. B. Hughey 11-B	386	3275
J. F. Meers 3-C	641	3272
Kewanee Oil Co., B. McKinney 7..	687	3290
Stanolind, H. H. Merten 5.....	220	3272
Sun, Patton-Purviance 7	551	3040
HUTCHINSON COUNTY—		
Alma Oil Co., J. A. Whittenburg 1-D, sec 19	556	3035
J. Gordon Burch et al, W. E. Herring 1-a	546	3196
L. S. Chism et al, Hodges 1.....	624	3080
Drilling & Exploration Co., Inc., R. L. Pond 3-a	618	3095
Gulf-Panhandle, C. L. Dial 75.....	276	3006
Magnolia, W. E. Herring 2.....	16	2857
Martex Pet. Co.-J. C. Alexander, Pitcher 2-B	429	3195
C. J. Oates & Morrow, W. A. Starnes 3	487	3217
Phillips, Cockrell 25	795	3022
Cockrell 26	523	3079
Juanita Johnson 3	743	3065
S. & M. Oil Co., Moore-Langdon-Conoco 8	463	3132
Simpson Oil Co., C. S. Terry 2....	424	3090
Smith Bros. Ref. Co., H. Umphries 1	822	3180
Stanolind, W. B. Haile 8-A	343	3072
H. B. Terry 7	545	2950
MOORE COUNTY—		
Panhandle Eastern P. L. Co., Masterson-Weymouth 1 .....¶31.5		2234
Texoma Nat'l Gas Co., J. T. Sneed 12 ..... ¶21		3108
WHEELER COUNTY—		
Du-Mar O&G Co., H. Finley 3.... ¶7.7		1986

*Failures; †Junked; ¶Million cu. ft. gas.

Brewster County Wildcat Logs Simpson

Floyd Dodson et al's Texas American Syndicate 1-a, northern Brewster County Ordovician prospect, was drilling at 6410 feet, and is credited with having entered the Simpson at 5980 feet, with an elevation of 4233 feet.

Magnolia Petroleum Company's John Sealy 1-79, C NE NE of G&MMB&A Section 79, Block F, northern Ward County, logged broken dry sand at 4140-55 feet in Delaware section, and was due to be abandoned after drilling beyond the 4275-foot level. It has an elevation of 2622 feet. The company holds lease on a 24-section block around this project.

Texas calls for state land bids

The Texas State Board for Mineral Development has called for bids to be received December 21, on tracts located in the Nueces River, Black Cypress Bayou, Trinity and Mission rivers, and Blanco and Medio creeks. The board had originally planned to receive bids on January 4.

The bids carried high minimum requirements and also cash bond was provided in cases where the state sought to force early development. The tracts are listed below:

Nueces River—Live Oak County:
Tract 1: $100 per acre, drilling to begin in 60 days, $7,500 bond.
Tract 2: $75 per acre, drilling to begin in 60 days, $7,500 bond.
Tract 3: $50 per acre, drilling to begin in 120 days, $7,500 bond.
Tract 4: $25 per acre, drilling to begin in 12 months.

Black Cypress Bayou—Marion County:
Tract 1: $25 per acre, drilling in 12 months.
Tract 2: $100 per acre, drilling in 60 days, $10,000 bond.
Tract 3: $100 per acre, drilling within 60 days, $10,000 bond.
Tract 4: $50 per acre, drilling in six months, $10,000 bond.

Trinity River—Anderson, Freestone and Henderson Counties:
Tract 1: $100 per acre, drilling in 60 days, $10,000 bond.
Tract 2: $100 per acre, drilling in 60 days, $10,000 bond.
Tract 3: $25 per acre, drilling within 6 months.
Tract 4: $25 per acre, drilling within 6 months.
Tract 5: $25 per acre, drilling within 6 months.

Mission River, Blanco and Medio Creeks—Refugio County:
Tract 1: $100 per acre and drilling within 60 day, $10,000 bond.
Tract 2: $100 per acre and drilling within 60 days, $10,000 bond.
Tract 1-M: $25 per acre and drilling within 12 months.
Tract 2-M: $25 per acre and drilling within 12 months.
Tract 3-M: $25 per acre and drilling within 12 months.
Tract 4-M: $25 per acre and drilling within 12 months.
Tract 1-B: $25 per acre and drilling within 12 months.
Tract 2-B: $25 per acre and drilling within 12 months.
Tract 3-B: $25 per acre and drilling within 12 months.
Tract 4-B: $25 per acre and drilling within 12 months.

The PENNINGTON Signaling WIRE LINE BARREL did in 7 Hours

COYLE-CONCORD OIL COMPANY
214 FROST NATIONAL BANK BUILDING
SAN ANTONIO, TEXAS
Nov. 26, 1937

Mr. Harry Pennington,
United States Heat Treating Co., Inc.,
319 Dakota St.,
San Antonio, Texas

Dear Mr. Pennington:

This is in reply to your recent query regarding the efficiency of your Signalling Wire Line Core Barrel.

We used your wire line barrel exclusively on our discovery oil and gas well, the South No. 2, recently completed on our block in Colorado County. One hundred percent recovery was obtained on every core taken. Our successful completion of this well was due to a great extent to your barrel, which enabled us to know exactly what our sand conditions were.

When soft oil sand was encountered, we did not expect to recover it in the first core. The recovery of this soft sand was made after penetrating two feet of hard, sticky shale and then eighteen inches of caprock. The bit then dropped into two and a half feet of soft oil sand. As we did not expect to recover the soft sand after drilling the hard rock, the core barrel was extracted from the well and, much to the surprise of everyone, had a full recovery of the shale, rock and soft oil sand.

* The coring was done through 4½" regular Hughes Acme tool joints. The cores recovered were 1 5/8" in diameter and in perfect condition.

We have told several of our friends about the splendid performance of your barrel, and it is our intention to use it again on our next well.

Very truly yours,

COYLE-CONCORD OIL COMPANY

By Arthur J. Coyle
Arthur J. Coyle

AJC:rc

what all other core barrels failed to do in 7 YEARS

This letter is typical of what users have to say about it!

*Note that this is the smallest size barrel, yet the cores were in perfect condition.

UNITED STATES
HEAT TREATING COMPANY, INC.
SAN ANTONIO U S TEXAS

Service Stations maintained at HOUSTON, BAY CITY and CORPUS CHRISTI

Export Office: 39 Cortlandt St., N. Y. C.

Distillate flow from second Opelika test increases.

* * *

Lower Trinity test gets underway in Sulphur Bluff.

Tyler, Texas.—A gain in flow of distillate and gas from the second test for Opelika geophysical prospect, Henderson County, after tapping the upper section of the basal Glen Rose partially offsets the adverse results recorded in the extensive search for deep production in the East Texas Woodbine basin. Authorization has been made for a 9000-foot project for the Kelsey dome, Upshur County, which was given a 6153-foot test in 1929, but did not penetrate the lower Glen Rose lime series.

Tide Water Associated Oil Company et al's McElreath-Suggett 2-C, located 880 feet southeast of a partially junked oil producer in the Opelika area, flowed 12.16 barrels of 57.6 gravity distillate, including 3 percent wash water, after gun-perforating casing at 7910-50 feet, with a plugged back depth of 8038 feet. The above rate of flow was on a 4-hour test through 28/64-inch choke, with 1850 pounds working pressure on the tubing and 2500 pounds closed in pressure recorded by the casing gauge. The well was originally drilled to Travis Peak at 9073-9320 feet, and when tested at 8795-8890 feet flowed 63 barrels of distillate in 19 hours through ½-inch choke, with gas volume rated at 7,000,000 feet daily.

Deep One for Kelsey

The deep test for the Kelsey area will be drilled by Tom Hunter and American Liberty Oil Company in the northwest corner of the Chas. Carter 80-acre lease, J. H. Fields Survey, about 1½ miles north of Kelsey. Leases in this area have been retained by majors since Amerada Petroleum Corporation's C. K. Wade 1, J. H. Fields Survey, established unusual geological conditions in drilling to the lower Glen Rose at 6153 feet. A series of Woodbine tests followed after the discovery of the East Texas field, but none showed oil or gas in commercial quantities.

Stroube & Stroube's United Banks 1, northeast corner of the J. W. Bowman Survey, Franklin County, 3 miles southeast of Hagansport, was nearing a decisive depth for production in the Paluxy series after coring to 4292 feet. This wildcat is about 2½ miles west by south of nearest production in the Talco field, and is on the same fault plane that is responsible for accumulation of oil in the Paluxy in the latter and in Sulphur Bluff field. Preliminary study of markers indicate that Banks 1 is checking low structurally, having logged top of Woodbine at 3071 feet and first Georgetown lime at 3627 feet, with an elevation of 373 feet.

Deep Trinity Test

Exploration of the lower Trinity series adjacent to the fault in the east portion of Sulphur Bluff field, Hopkins County, is underway after landing a long string of surface pipe. Walter L. Goldston and Normandie Oil Corporation are making this deep test on the H. J. Smith 450-acre lease, J. A. Craft Survey, and location is immediately north of the deadline for Paluxy production in order to allow for normal throw of the fault. D. S. Hager, W. P. Luse and Russ Petroleum Company, co-discoverers of the field, contributed $9000 dry hole money towards the drilling of Smith 10, which will proceed to the Travis Peak.

Abbott and Rutland's Lee Peyton 1-a, J. Burkham Survey, 2 miles north of the town of Sulphur Bluff, Hopkins County, halted operations at 4218 feet in Paluxy zone after failing to log oil or gas showings. Top of Georgetown

Per-Well Rule Boosts Drilling

Kilgore, Texas.—Protective measures adopted by the Texas Railroad Commission in placing the East Texas field on a 6-day production basis to conserve the remaining flowing energy and to retard the spread of water are partially offset by the approval of permits to drill wells on densely developed properties.

Currently the field has an average of one well for each 5½ productive acres. This density figure is gradually shrinking as a large quota of new producers are added to the proration schedule each month. Survey of field activity reveals 181 operations, including 87 active tests. Substantial number of the latter projects and permit applications pending are on leases that have an average of one lone well per acre.

Allocation of production on a well basis has placed a premium on excessive drilling. Majority of the 1100 participating operators have taken full advantage of opportunities afforded by such a proration method with the aid of a liberal policy governing well permits.

Fourteen majors operate leases aggregating 79,997 acres, or 60.15 percent of the total credited to the field. These companies have 12,576 wells for an average density of 6.36 acres. Independents have an average density of one well for each 4.59 acres, and are producing 47.86 percent of the daily allowable from an equal percentage of the total wells, although their combined acreage is 39.85 percent.

Two factors are responsible for the current drilling. One group of operators are pushing developments to garner an extra share of the oil in place, while the other is on the defense and must go down the line as a matter of drainage and to forestall court action by royalty owners. Majors have made no progress within the past several years in equalizing total wells and daily allowable with the other participants. The former are credited with 37.6 percent of the current operations, while the miscellaneous group lead in field work with 62.4 percent of the total. Majors will be required to drill in excess of 4800 additional wells to place their well density on a par with the independents.

Comparative table on well density of the major interests, and the miscellaneous group follows:

COMPANY	Productive Acres	Total Wells	Average Acres per Well	Approximate Daily Allowable
Humble Oil & Refining Company	14,745	2,322	6.3	47,137
Gulf Oil Corporation	8,790	1,345	6.5	27,304
Atlantic Refining Company	6,756	1,229	5.5	24,949
Magnolia Petroleum Company	7,587	1,195	6.3	24,259
Stanolind Oil & Gas Company	7,410	1,153	6.4	23,406
Sinclair Prairie Oil Company	6,783	1,008	6.7	20,462
Tide Water Associated Oil Company	5,031	850	5.9	17,255
Sun Oil Company	5,969	855	6.9	17,357
Shell Petroleum Corporation	4,341	762	5.6	15,468
Ohio Oil Company	4,873	582	8.3	11,815
Arkansas Fuel Oil Company	2,996	528	5.6	10,718
The Texas Company	3,300	487	6.7	9,886
Cities Service Oil Company	1,248	242	5.1	4,913
Continental Oil Company	168	18	9.3	365
Totals for majors	79,997	12,576	6.36	255,294
Miscellaneous operators	53,003	11,542	4.59	234,301
Field totals	133,000	24,118	5.50	489,595*

* Daily allowable for 6-day week, and 1720 barrels to be deducted for 86 accounted for dead wells.

was called at 3348 feet, with an elevation of 355 feet.

Humble Oil & Refining Company and Gulf Oil Corporation's Robertson 1, 4 miles east of production in East Texas field and the first deep test for Gregg County, was coring at 7535 feet. Top of Travis Peak was logged at 7325 feet, with an elevation of 272 feet.

EAST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
R. W. Fair & Thompson, W. E. Wiley 7-A (25.89-ac)	480	3623
W. E. Wiley 7-B (25¾-ac)	420	3592
R. Haddaway et al, London M. E. Church 5 (2-ac)	7000	3764
Humble, J. E. Glover 20 (132½-ac)	7300	3714
Kangerga Bros. 17-B (124.6-ac)	5800	3650
Kangerga Bros. 18-B (124.6-ac)	5500	3632
J. W. Turner 38 (286.52-ac)	7500	3717
Manahan Oil Co., W. F. Neal-Shell 17 (109½-ac)	3000	3751
Milford Oil Co., M. A. Thrash 8 (30-ac)	5500	3730
Stanolind, W. H. McCord 3 (31.89-ac)	*	3611
Stanolind-Pure, W. H. Siler 59 (983.53-ac)	240	3696
Sun, R. Jeff Hendon 21 (119.41-ac)		
KILGORE AREA—		
Arkansas F. O. Co., Hughey-Ross 38 (220-ac)	6000	3554
J. G. Beard et al, E. Muckelroy 5 (19-ac)	7500	3604
Gulf, R. H. Still 22 (188.38-ac)	2600	3589
Humble, Henry Sexton 38-B (258.6-ac)	6200	3673
Magnolia, R. H. Rowland 6 (12.49-ac)	120	3600
R. H. Still 9 (45-ac)	100	3602
Navarro Oil Co., R. N. Brightwell 27 (113-ac)	7000	3661
Shell, Williams-Bonner 9 (36-ac)	9500	3564
Sun-Seaboard, M. T. Cole 57 (266.17-ac)	8000	3567
Texas Co., Wm. Baxter 15 (96-ac)	6500	3675
LONGVIEW AREA—		
Atlantic, J. J. Fuller 8 (49.27-ac)	5000	3749
D. A. Porter 23 (109.23-ac)	8000	3720
Ellis Oil Co., C. J. Mackey-Humble 16 (147.1-ac)	900	3701
C. J. Mackey-Humble 17 (147.1-ac)	250	3679
Gulf, A. V. Bacle 16 (69¾-ac)	7600	3608
L. G. & S. Oil Corp., D. W. McQueen 3-C (94.54-ac)	480	3690
Magnolia, N. W. Blackwell 13 (90-ac)	5500	3658
L. J. Everett 32 (166.96-ac)	6000	3658
Irene Zeigler 12 (83.18-ac)	4000	3484
Pete H. Pewitt et al, L. A. Williford 19 (133-ac)	1500	3706
Selby O&G Co.-Lewis Prod. Co., L. C. Ingram 12 (80-ac)	9800	3535
Sun, J. T. Loden 16 (100.58-ac)	6000	3631
J. T. Loden 18 (100.58-ac)	..	3680
ANDERSON COUNTY (Long Lake)—		
Alex McCutchin et al, J. Brantley 1 (20-ac)	3600	5334
FRANKLIN COUNTY (Talco)—		
Gray & Wolfe, Price 2 (4-ac)	279	4312
Humble, T. L. Leake 4 (191.9-ac)	189	4314
FREESTONE COUNTY (Cayuga)—		
Stanolind, J. S. Cullinan 4 (365-ac)	300	4038
HENDERSON COUNTY (Cayuga)—		
F. M. Allison Prod. Co., A. G. Williams 4 (100-ac)	2500	4085
HOPKINS COUNTY (Sulphur Bluff)—		
W. L. Goldston-Normandie Oil Corp., H. J. Smith 19 (450-ac)	250	4532
D. S. Hager, W. P. Luse & Russ Pet. Co., Jeff Worsham 4 (40-ac)	250	4520
CASS COUNTY (Rodessa)—		
Union Prod. Co., Fee 5, Bryant Holes sur	200	6070
MARION COUNTY—		
Heyser Heard & Clardy, L. Henderson 1, R. Bennington sur	2160	6030
Mid-Continent Pet. Co., Sory 4, A. D. S. Coy sur	840	6082
PANOLA COUNTY—		
Danciger, J. W. Tatum 1, Alfred Bissell sur	*	6514
MARION COUNTY (Rodessa)—		
Holcomb & Thomasson, Lizzie Henderson B-1, Bennington sur	396	6045

*Failures; †Junked; ¶Million cu. ft. gas.

SOUTHWEST TEXAS

New strikes and extensions revive Mirando district.

* * *

San Patricio County wildcat may open new field.

* * *

Goliad County wildcat has oil showing in Vicksburg.

Laredo.—New strikes and field extensions revived interest in the Mirando District, which for weeks has shown a decline due to routine operations and wildcat failures. Webb, Jim Hogg, Duval were included in the counties providing new producing acreage.

Bob Moore Hits

Probably the most important is the R. B. Moore & Paul L. Meaders' Garcia & Villareal 1, SE NE Section 338, one mile north of Oilton, which encountered the Rosenberg sand in the Cockfield at 2407 feet, the good sand continuing to 2430 feet carrying gas. Shaley section was found below, the well being carried to 2505 feet. A drill stem test at 2407-20 feet developed 500 pounds pressure in five minutes. Another at 2430-42 feet showed a fair gas blow and a spray of salt water in 15 minutes. The test was plugged back to the upper Mirando sand at 1903-22 feet, where completion is being effected as a gasser.

New Play Is Prospect

This trend has been productive in gas and oil in the Mirando sand series, but this well is the first to show possibilities in the lower section. As a result, there is a likelihood of more wells drilling on its flanks in an effort to uncover new and deeper sands. It is obvious that a new trend play is in prospect.

Darby Petroleum Company's R. Holbein 1-C, NW Section 20, about 1½ miles southwest of the first two gassers in Las Animas field, Jim Hogg County, developed 350 pounds pressure and no oil on a 10-minute drill stem test at 1779-89 feet the Cole sand. The well found sand at 1771-1850 feet and set casing after drilling to 1867 feet.

Extend North Sweden

Lonnie Glasscock's Mrs. F. O. Farias 4 extended the Pettus or Navarro sand production of the North Sweden field, Duval County, 4700 feet east when it encountered a sand section 5358-68 feet and set casing on top of the horizon. A drill stem test at 5354-58 feet through ⅜-inch chokes, top and bottom, recovered 170 feet of mud and oil (largely oil), 270 feet of pipe line oil, and 75 pounds pressure in 15 minutes. The test is doubly important. It not only extends the deeper sand, but indicates that it will overlie much of the present producing area in the upper sands.

About ½ mile northeast of the field, Frank J. Gravis' F. Vaello et al 1-A, was coring for the lower sands after failing to find commercial production in the regular Jackson zones. Its latest drill stem test at 4897-4906 feet through ⅜-inch chokes, top and bottom, recovered 25 stands of salt water with a skum of oil. The sand section did carry an odor of oil.

In the original Sweden field, Hiawatha Oil & Gas Company continues to provide short extensions to Cockfield sand production.

Several Sand Lenses

Joe Gier and Kone Production Company's No. 3 W. R. Peters, NE SW Section 38, Duval County, indicates several sand denses in the Cole series in the Peters field. The well found only three feet of sand in the regular Cole sector producing in this area, but it was shaley and a new sand was found about 30 feet deeper, at 1753-73 feet, where a 25,000,000 cubic foot gasser with 650 pounds pressure was completed.

Wellington Oil Company of Delaware's J. F. Welder 8-D, discovery well of oil production in the Cole sand in Seven Sisters field, Duval County, flowed 194.65 barrels of oil per day on a potential test through ⅜ inch choke, pressures being 300 pounds on tubing and 625 pounds on casing. The test, in sand at 1710-20 feet, is showing some water, apparently from leaks around the casing.

Several possible strikes; one indicates a new field

Corpus Christi.—Several possible oil strikes were reported in the South Texas Gulf Coast counties late in the week, one indicating that a field will be opened on a likely prospect.

A. L. Bobb encountered a sand section showing gas and distillate at 4410-69 feet in J. F. Green Estate 2, two miles southeast of Gregory in San Patricio County.

It recovered 1775 feet of salt water, a skum of oil and 70 pounds pressure on a 10-minute drill-stem test and was coring. The show apparently is in the Catahoula. The well is in the T. T. Williamson Survey, 4550 feet south of the first well which attempted completion in the Frio around 7000 feet, but was unsuccessful. Several other wells drilled in the general area had showings in the Marginulina and Frio zones below 6000 feet and set cas-

ing, but did not succeed in production attempts.

May Connect Fields

Stanolind Oil & Gas Company's attempt to connect Placedo and Keeran fields, Victoria County, apparently will meet with success. Henderson and Pickering 1, east corner Block 16, is testing through perforations at 6371-78 feet. The well drilled to 7502 feet, tested through perforations at 6375-82 feet, and recovered 42 stands of salt water, the top 23 carrying about 30 percent oil, under no pressure, on a 13 minute drill stem test through ¼ and ⅜-inch chokes. The test did have a fair gas blow and headed some of the fluid out of the drill pipe while breaking down. The new test, higher in the sand, may lead to the completion of an oil producer.

Five miles southeast of the Telferner townsite in Victoria County, W. V. Bowles and Company's D. L. Robertson 1, which originally drilled to 6138 feet, plugged back and whipstocked at 5505 feet, drilling to several sands below 5600 feet which showed oil and gas.

San Patricio County has one well removed from the active list. Argo Oil Corporation's Soehnge 1, Delgado Grant, 1½ miles north of Mathis, swabbed little gas, oil and water through a series of perforations between 4840-52 feet and has been abandoned at 6310 feet. Conroe Drilling Company has made location for Dougherty 1, McGloin Survey, west of Angelita field, for a 6500-foot Frio sand test.

J. K. Culton and Paul L. Meaders are working out a deal for the drilling of Bailey 1, five miles west of Robstown, to at least 7000 feet. The wildcat is below 6330 feet. Richardson recently extended Luby field one mile northeast and opened a new shallower sand through the completion of Cunningham 1, which flowed 10,000,000 cubic feet of gas and sprayed 114 barrels of 52 gravity oil through 1.4-inch choke under pressures of 1275 pounds on tubing and 1375 pounds on casing. Perforations were made at 4084-88 feet.

Discovery Attempt Fizzles

H. H. Howell's attempt to open a field seven miles southwest of Alice in Jim Wells County is not too successful. The test, J. R. Talbott 1, perforated at 3296-3304 feet, tested sulphur water, cemented and perforated again at 3317-21 feet.

Magnolia Petroleum Company's deep prospect in southeastern portion of the county tested 5022 feet of fluid, practically all salt water, in 20 minutes after perforating at 6656-66 feet, and new perforations are being made higher. The well is Seeligson 7.

Jackson County has an interesting wildcat, Temple Hargrove and Wynne Crosby's Hodges 1, Lot 65, three miles northwest of La Ward The well drilled to 6523 feet, plugged back, and landed casing around 6400 feet for tests of sands logged at 6280-95 feet and 5265-70 feet.

Danrey Oil Company's Lee Hays Estate 2, in McCampbell field, Aransas County, blew out at 752 feet from a shallow water sand charged with gas from a leak in the casing in Hays Estate 1. The rig was moved away to safety, but the hole cratered. It was killed by pumping water and mud through the hole in the first well, then cementing the break.

Bringing in new field mile southwest of La Reforma

Mission.—Another oil field below 6000 feet was considered in the making as the week closed with J. L. Collins and Company's A. Guerra 1, one mile southwest of La Reforma in Starr County, attempting a production test. The well found sand at 6126-40 feet, the upper portion showing 30 gravity oil and the lower salt water. The hole is bottomed at 6176 feet with casing set on bottom and perforated at 6126-30 feet. It was being swabbed at last reports to induce flow.

The well, if productive, will open Frio sand production in an area heretofore out of the main drilling play. It is near the Hidalgo County line and directly north of Samfordvce field.

Sal Viejo Oil Company's Garcia et al 1, Share 59, Kenedy County, was coring below 7730 feet after a drill stem test at 7590-7684 feet, in a sandy section, failed to develop anything. Southwest, in Willacy County, Shell Petroleum Corporation's Yturria 2, Share 64, has been abandoned at 8335 feet, while Magnolia Petroleum Company is drilling a water well before continuing below 7145 feet in Armendiaz 1, Share 4.

Hidalgo County's key wildcats are highly interesting. Atlantic Refining Company is coring below 8740 feet in American Rio Grande Land and Irrigation Company 1, Section 175, after it attempted to blow out from a thick gas sand topped 8611 feet. Y & B Oil Company's Waite Brothers 1, six miles southwest of Mission in Share 382, is reaming to deepen from 5558 feet to 8000 feet.

Vicksburg oil assured by wildcat in Goliad County

Beeville.—Vicksburg sand production in Southwestern Goliad County is assured with Rual B. Swiger et al completing Carrie Wood 1-B, potential discovery well of a new field. The test found sand at 5013-23 feet and shale to 5043 feet, where casing was landed. The pipe was perforated in this sand section, where completion is being affected.

The Swiger test was perforated at 5008-19 feet and 5020-25 feet, after which it swabbed both salt water and oil. This apparently was due to a bad cement job and new cement was squeezed in.

The pool, if finally opened, will be referred to as Sarco Creek. The prospect gained that name through the drilling of wells by Keystone Royalty Company 8000 feet southwest of the new well. Both showed signs of production in this horizon, but were unsuccessfully completed. Another test, 12,500 feet northeast, drilled by Swiger et al, showed at this level, but was not completed.

Stanolind Oil & Gas Company, Darby Petroleum Corporation, Tidewater Associated Oil Company, Shell Petroleum Corporation, Union Producing Company, Memphis Natural Gas Company, Humble Oil & Refining Company, T. G. & M. Drilling Company, Tom Heard, Edwin B. Hopkins, and S. L. Wadley have protection against this well.

This discovery is looked upon as being rather important in that it is in the Vicksburg horizon. The majority of the production along the South Texas Coastal Plane is either in the sands above the Vicksburg or in the Jackson and sands below. The Vicksburg zone, therefore, is very new from an information standpoint, but likely will be a source of much future production.

In northeastern Live Oak County, interest centers around the Lewis Ayres Survey, where several tests have been drilled recently. The newest is J. H. Turner's Dow Young 1, which on a drill stem test of the Government Wells sand at 888-921 feet recovered several joints of mud and oil, a gas blow and some salt water in 8½ minutes. It was then drilled to 1013 feet in the Loma Novia sand, where it was abandoned. The test's show in the Government Wells horizon may be the key to production somewhere on the structure.

Recently discovered Nash Creek gets five locations

San Antonio.—Five locations have been made, two being active, in the newly discovered Nash Creek field of Guadalupe County. Carver and Kallison, discoverers of the field, have commenced actual drilling of T. C. Howell 1, ½ mile to the south of the discovery and C. A. Burris 1, one mile to the south of the original wells. Locations have been made for offset to the discovery on the Rumpf and Kelly tracts. About 2½ miles southwest of the first producer, Buchanan and Blanco are waiting on a rig for Howell 1.

342 Texas permits

The Texas Railroad Commission last week granted 342 permits for drilling new wells in Texas, 106 more than were approved last week.

The East Texas field advanced to first place with 121 new locations, including 55 from Gregg, 53 from Rusk, 11 from Upshur and 2 from Smith counties. East Central Texas listed 25 permits with 10 in Franklin County.

Operators in the Gulf Coast area reported 64 new locations, including 26 in Brazoria County. Southwest Texas listed 43 permits with 15 in Duval County.

There were 36 permits granted in the West Texas District, while West Central Texas operators reported only 10 new locations.

North Texas listed 34 new locations, including 17 from Jack County, while Panhandle operators were granted only 9 permits.

Government approved 898 permits last year

A total of 898 oil and gas prospecting permits, embracing approximately 564,849 acres of land, was granted by the General Land Office during the fiscal year ended June 30, last, it is disclosed by the annual report of that agency, made public last week by the Interior Department.

A total of 1028 cases were acted upon in conenction with the issuance of leases under Section 14 of the leasing act of 1920, and 63 leases, embracing

43,330 acres, were delivered to the lessees, and 7 leases, embracing 1302 acres, were sold under Section 17 of the act, on which the total amount of bonus received was $85,668. One lease was canceled.

SOUTH TEXAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
SAN ANTONIO DISTRICT		
BASTROP COUNTY—		
C. R. Franklin, Thaxton & Yarrington 1, 300 ft swl, 450 ft nwl, 50-ac tr, Bangs sur	*	550
CALDWELL COUNTY—		
Pat Armstrong et al, H. L. Rodenberg 1, Guadalupe College sur (Northeast Luling)	750	2240
Golden West Oil Co., Cora Malone 3, A. Floyd sur (Salt Flats)	200	2596
Hantho-Nelson, Inc., F. M. Branyon 4, D. Cooper sur (Branyon)	522	2175
C. W. Matheny (Diamond Half), McKean Trust Est. 1, N. Reaville sur (Luling), (pb td 2050 ft)	35	2256
Murchison, Reed et al, Hattie Jennings 2, J. Henry sur (Luling)	1000	2090
Potter & Snowden, Inc., A. P. Cartwright 1, J. Henry sur (Luling)	*	1991
Second Natonal Oil Co., E. B. White 2, J. Pinchback sur (Branyon)	*	2439
Taylor Ref. Co., S. Punch 2, Guadalupe College sur (Northeast Luling)	*	2250
GUADALUPE COUNTY—		
Diamond Half Oil Corp., Henry Willie 3, Jacob C. Darst sur (Darst Creek)	115	2666
MAVERICK COUNTY—		
Rheingold & Rueben, Johnston 1, I. & G. N. RR sur, 1000 ft nl, 529 ft wl, sec 7	*	1800
CORPUS CHRISTI DISTRICT		
ARANSAS COUNTY—		
Atlantic Ref. Co., L. L. Porterfield Est. 2-A, lot 8, blk 14, (McCampbell) (pb td 7135 ft)	280	7259
Barnsdall Oil Co., Kate J. Edwards 1, Wm. Lewis sur (Lamar) (workover)	*	7997
Danrey Oil Co., Lee Hays Est., 2, lot 18, blk 8 (McCampbell)	†	752
CALHOUN COUNTY—		
Humble & Plymouth, H. T. Marshall 5, A. Sisneros sur (Heyser)	850	5471
P. H. Welder 20-B, A. Sisneros sur (Heyser)	650	5492
Portilla Drlgs. Co., P. H. Welder 11-C, A. Sisneros sur (Heyser)	*	6133
GOLIAD COUNTY—		
Jane Oil Co., O. A. Mudd 5, Brooks & Burleson sur 25, (N. Pettus) (perf 3670-80 ft)	180	3919
JIM WELLS COUNTY—		
Tom Graham & Mistex Oil Co., J. J. O'Donnell 1, SK&K sur, center of lots 77-84, sec 81, Haldeman subd, Seeligson Ranch	180	2337
KARNES COUNTY—		
Luling O&G Co., C. W. Boyce 12, S. D. Still sur (South Burnell)	475	3655
C. W. Boyce 13, S. D. Still sur (South Burnell)	600	3654
LIVE OAK COUNTY—		
Charles Hannah, C. H. Wedding 1, 8250 ft el, 3100 ft sl B. Haughy sur 1	*	1890
Holland Oil Co., Alamo Lumber Co. 1, 330 ft sl and el, lot 26, blk 16, J. Poitevent sur 99	*	1709
Southwest Drlg. Co., B. Hill Est. 2, blk 45 (Ezzell)	275	1511
Sure Oil Co., P. G. Ford 1, blk 46 (Ezzell)	150	1511
NUECES COUNTY—		
J. E. Freeman, Harry Kobner 1, CEIP&M sur 500 (Saxet)	250	6750
Hiawatha O&G Co., Hutchins-Stillwell 14, blk 30 (Saxet)	300	6944
Houston Oil Co., Rand Morgan 30, sec 7, rge 5 (Saxet)	150	4547
Rand Morgan 33, sec 7, rge 5 (Saxet) (perf 3955-63)	¶10	4539
Humble & Barnsdall, M. C. Collier et al 3, lot 31, blk 48 (Flour Bluff)	500	6669
J. T. Smith 2, lot 10, blk 49 (Flour Bluff)	500	6650
R. A. Thompson et al 2-A, lot 4, blk 56 (Flour Bluff)	500	6655
Richardson Pet. Co., Bertha Cunningham 1, 330 ft nl and wl, s½ of sec 77, Laureles farm tr (Luby) (perfs 4016-20 ft)	¶10 & 114	5300
T. M. Harrell 3, Kinney sur (Saxet)	625	6996
Perkins-LeGasse 7, Sheppard Farm lots (Saxet) (perfs 4544-64 ft)	225	6924
Sultex Oil Co., L. M. Vance 5, Thos. Gallagher sur, (Saxet) (perfs 3971-84 ft) (owdd)	¶10	8229
REFUGIO COUNTY—		
Hewitt & Dougherty, M. F. Lambert 60, Wm. Hews sur (Fox), (owdd), (perfs 5862-70 ft)	250	6642
Quintana Pet. Corp., Mrs. F. V. W. Heard 12, T. H. Webb sur (Tomoconnor)	2500	5925
Tom O'Connor 22-C, J. Carr & J. Connell sur (Tomoconnor)	450	5925
SAN PATRICIO COUNTY—		
Argo Oil Corp., A. Soehnge 1, 715 ft n and slightly east at r/a from Mathis-Oakville rd, Delgado gr.	*	6310
WILLACY COUNTY—		
Shell Pet. Corp. et al, Yturria Cattle Co. 2, 1398 ft el, 466 ft sl of 59.51-ac lse, sh 64, San Juan de Carricitos gr	*	8335
LAREDO DISTRICT		
Circle Oil Co., Merle West 1, S. Flores gr (N. Sweden)	175	5370
J. L. Collins & Co., E. R. Hagist 1, 330 ft s and wl, blk 2, BS&F sur 267	*	2323
Conservative Oil Co. DCRC (Sun) (Humble), sec 47 (Colmena)	*	lcn.
Gier & Kone Prod. C., R. Peters 3, sur 38 (Peters)	¶25	1773
Government Wells Oil Co., H. A. Lundell 12, HE&WT RR sur (Lundell)	100	1514
Magnolia, DCRC 10, J. Poitevent sur (Piedra Lumbre)	115	2032
Reynosa Oil Co., F. G. Wilson 8, S. Flores gr (N. Sweden)	125	4782
Russ Pet. Corp. et al, F. Vaello et al 1, San Andres gr (N. Sweden)	25	4800
Slaughter & Hugle, J. B. Hunter Est. 1, 330 ft sl and el, 80-ac lse, sec 515, J. Poitevent sur (Loma Vista) (workover)	*	4732
Wellington Oil Co., J. F. Welder Heirs 8-D, sur 381 (Seven Sisters)	195	1720
McMULLEN COUNTY—		
H. K. Boysen et al, Munson Ranch 1, CEP1&M sur, 233 ft nel, and sel of sur	*	2011
Harry Ezzell, Fee 4-A, A. Glavecke sur 1 (Ezzell)	273	1510
Fee 8-A, J. Forbes sur (Ezzell)	375	1551
Fee 1-C, H. Russell sur (Ezzell)	550	1510
Fee 2-C, H. Russell sur (Ezzell)	132	1490
STARR COUNTY—		
Dean Brothers, M. Valadez 1, 669 ft nl, 150 ft wl, 40-ac lse, e 2/7 por 84	30	1873
Sun Oil Co., H. P. Guerra 1-F, 1398 ft nel and sel of por 109, J. S. Garcia gr	*	3916
C. Phillip Wardner 5, por 84 (S. Ricaby)	*	2379
WEBB COUNTY—		
J. M. Anderson et al, Maria G. Martin 2, sur 786 (Oilton)	120	1940
Bridwell Oil Co., Maria G. Martin 13, sur 2167 (Oilton)	150	1919
French Oil Corp., J. G. Perez 6, sur 1007 (Killam)	40	2005
O. W. Killam, A. M. Bruni Est. 60, sec 8 (Cole-Bruni)	50	3416
Garcia & Villareal 2-B, sur 337 (Killam)	100	1985
Navarro Oil Co., R. F. Perez 1, sur 1007 (Killam)	60	1988
R. F. Perez 1, sur 1007 (Killam)	62	1989
Ross Amigos Oil Co., W. Breckenridge 3, sur 460 (Mirando City) (owdd)	¶2	1891
Smith & Hamill, Maria G. Martin 8, sur 2167 (Oilton)	85	1890

*Failures; †Junked; ¶Million cu. ft. gas.

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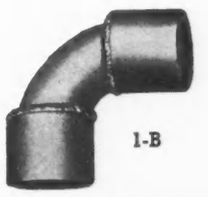
1-B

3-A

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TEXAS GULF COAST

Potential discovery at McFaddin Beach to test again.

* * *

New 40-gravity oil sand for Call field at 7105 feet.

Houston.—On the McFaddin Beach prospect, Jefferson County, Shell Petroleum Corporation was preparing to make another drill stem test on W. P. McFaddin 1, S. A. Pace Survey. Sand showing oil was logged from 5464 to 5479 feet in Miocene formation. Last week a drill stem test from 5408 to 5449 feet showed 1400 feet of gas cut muddy salt water, no oil, and 185 pounds pressure through quarter-inch chokes in 10 minutes.

McFaddin 1 previously had indicated it would open a new field in the Texas Gulf Coast when a drill stem test at 5389 to 5408 feet showed 450 feet of oil, 45 pounds pressure, and no salt water through quarter-inch chokes in nine minutes.

Ingot Oil Company and Merit Oil Company's Wright 1, Cedar Bayou area, C. Smith Survey, Chambers County, jumped back into the spotlight last week on rumors that it had opened a new oil field. However, later reports are that casing was perforated from 6431 to 6433 feet with 12 shots and the wildcat came in flowing 580 barrels of fluid, 30 percent 31.7 gravity oil and 70 percent salt water through a quarter-inch choke. Tubing pressure was 160 pounds and casing pressure was 900 pounds. On November 29 the well was making 158 barrels of fluid daily. November 30 at 4 p.m. the well died and was switched to a half-inch choke and tubing pressure was 175 pounds and casing pressure was 725 pounds. At the end of last week the tubing pressure had dropped to 70 pounds. Opinion is that it probably will die again.

The companies have made two new locations at Cedar Bayou. Winfree 1 is 660 feet north of Wright 1 and Ilfrey 1 is 660 feet south of Wright 1.

To Test in Anahuac Flank

On the south and west side of Anahuac field, Humble Oil & Refining Company was preparing to make a production test on A. D. Middleton C-2, H. & T. C. Survey, Section 52, in Frio formation at 7133 feet. Top of sand showing oil was encountered at 7119 feet and a drill stem test attempted from 7085 to 7133 feet, but the testing tool slipped.

Two wells in the Seabreeze area, Chambers County, were in sand showing oil. Sun Oil Company's Broussard Hebert 2, T. & N. O. Survey, Section 128, was down to 8280 feet after logging sand from 8230 to 8240 feet. The same operator's Hoffman 1 was running an electrical logging device at 8465 feet after logging top of the oil sand at 8422 feet.

The second commercial producer was completed at Hitchcock field, Galveston County, to extend the producing area 660 feet west. N. W. Hunter's Stewart 1, J. Spillman Survey, made 474 barrels of 30.6 gravity pipe line oil daily through a 3/16-inch choke with a tubing pressure of 675 pounds and a casing pressure of 875 pounds after casing had been perforated in Miocene sands with 47 shots from 5140 to 5152 feet.

Southeast of production 1¼ miles, Humble Oil & Refining Company abandoned Kohman 1, J. Sellers Survey, at 8260 feet. Gas sand was logged at this depth.

On the Genoa prospect and north of Friendswood field, Harris County, Gulf Board Oil Corporation abandoned Ross 1, G. P. Burnett Survey at 6505 feet after coring salt water sands in Frio formation. Top of salt water sand was found at 6213 feet.

On the Houston Ship Channel, H. C. Cockburn's White 1, Harris & Carpenter Survey, Harris County, logged salt water sand from 5325 to 5330 feet and was drilling in shale at 5679 feet at the close of the week.

Tool Slips at Clinton

At Clinton and 400 feet east of Stanlind Oil & Gas Company's Candelari 1, Reels and Trobrough Survey, the company's Oates 1 was flowing into burning pits last week making washwater. Oates 1 was drilled to 3835 feet in sand showing oil. Top of the broken formation was logged at 3799 feet. The crew attempted a drill stem test from 3795 to 3823 feet through quarter-inch chokes and the testing tool slipped. Recovery was 300 feet of gas and oil cut mud.

Hastings field, Brazoria County, continues to be the most active field in the Gulf Coast. Last week there were 16 new oil producers completed in the field and one dry hole, north of production. This is the largest number of completions ever completed at Hastings in any one week.

New Sand at Call

A new producing horizon was discovered at Call field, Newton County, last week when Houston Oil Company's Sabine Tram 2, 2000 feet southwest of the discovery well, H. &. T. C. Section 37, made a drill stem test at 7105 to 7123 feet and showed 1530 feet of 40 gravity oil in 15 minutes through quarter-inch chokes. Pressure was 85 pounds. Seven-inch casing is being set. The well cored water sand at 7044 to 7049 feet before picking up the new sand. It missed the regular producing horizon for the field.

Humble Oil & Refining Company marked up another failure at Devers, Liberty County. Moore 1, M. Whittington Survey, was abandoned at 6500 feet after coring salt water sand.

Hardin Outposts Flow

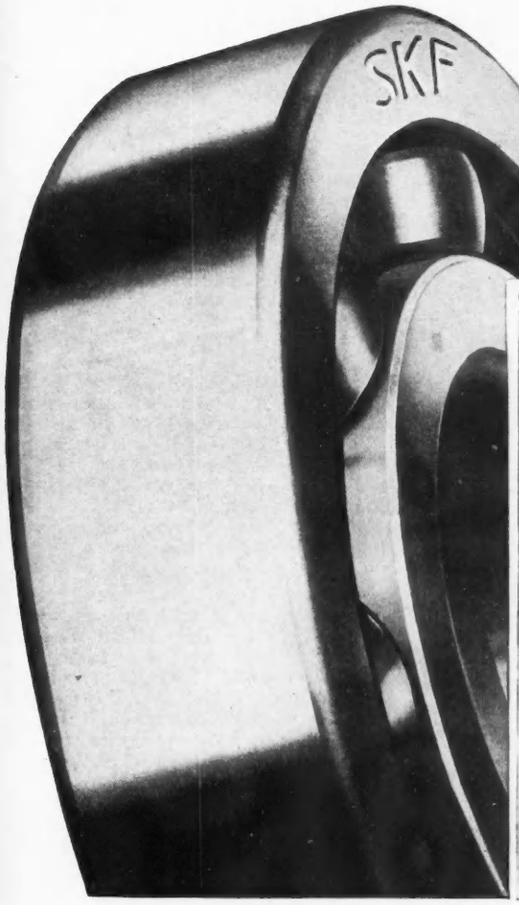
East of production at Hardin, Liberty County, Woodley Petroleum Company completed McMutry 4, H. B. Johnston Survey, at 7597 feet making 20 barrels per hour through a quarter-inch choke, with a tubing pressure of 775 pounds and a casing pressure of 800 pounds. Southeast of production, Strake Petroleum Corporation's Finley 2 was flowing into burning pits making oil and washwater through a quarter-inch choke. Depth is 7545 feet.

Shell Petroleum Corporation, Sun Oil Company, and Atlantic Refining Company all made new locations last week in Hardin, which is becoming one of the more active fields in the Texas Gulf Coast.

Texas Gulf Coast Completions

Company Well and Location	Init. Prod. Bbls.	Depth
ANAHUAC—		
Gulf, Wilcox 7	659	7120
CLEVELAND—		
Gulf, Kirby 20	67	5823
CONROE—		
Humble, Madeley 34	363	5114
DAMON MOUND—		
Sinclair, Jackson 26	60	2660
DICKINSON—		
Atlantic, Lippman 3	408	8155
Humble, Kohmann 1	*	8260
Gulf Board, Ross 1	*	6505
HARDIN—		
Woodley, McMurtry 4	480	7597
HASTINGS—		
Humble, Alexander 3	600	6080
Alexander 4	624	6080
Brown B-10	600	6080
King 3	627	5750
Pearland Oil Co., Latimer 1	*	6232
Producers Investment Co., Alexander 3	564	5660
Stanolind, Curkeet B-21	604	6080
Curkeet B-22	517	6075
Curkeet B-24	466	6080
Curkeet A-26	572	6079
Ford A-16	540	6100
Matsushita 5	587	6075
Remley 4	607	6080
Roberts 3	661	6080
Woodbeen 1	597	6030
Wooster 6	493	6080
Wright 2	535	6080
HITCHCOCK—		
N. W. Hunter, Stewart 1	474	5152
MAGNET—		
Texas Crusader, Cockburn 4	149	5540
NORTH CHEEK—		
Magnolia, Phelan 1 (wo)	147	8410
PALACIOUS—		
Atlantic, Foley Land Co., 2-A	*	8590
PICKETT RIDGE—		
Texas Co., Marek 3	48	4610
PIERCE JUNCTION—		
Gulf, Cain 13-D	210	4514
SILSBEE—		
Republic, Brooks 24	350	6907
Brooks 25	700	6940
TURTLE BAY—		
Sun, Chambers 7	384	6550
WEST BEAUMONT—		
Stanolind, McCormack 9	234	5879
Texas Co., Pansy Yount 2	260	5878
LIBERTY COUNTY—		
Humble, Moore 1, Devers area, M. Whittington sur	*	6500
WALKER COUNTY—		
C. W. Markel et al, Hall 1, w of Huntsville, S. Montgomery sur	*	2100

*Failures; †Junked; ‡Million cu. ft. gas.



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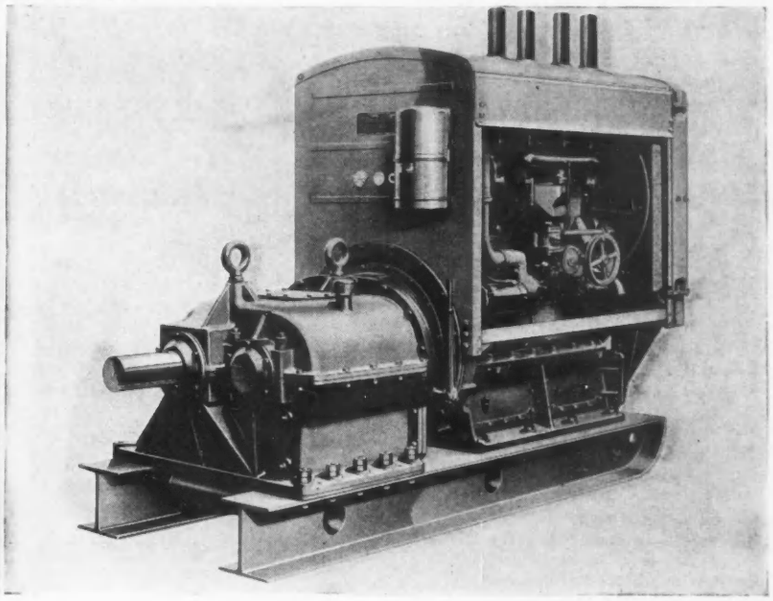

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SOUTH LOUISIANA

Quarantine Bay put on map with 845-barrel initial.

* * *

Extension and new sand for Welsh field probable.

* * *

First good well in three years at Anse La Butte.

Lake Charles.—No longer is Quarantine Bay, Plaquemines Parish, listed as a prospect; it was converted into an oil field November 28 when Gulf Oil Corporation's State QQ-3, Section 17-19s-17e, came in flowing 845 barrels of 36.3 gravity pipe line oil daily through a quarter-inch choke with a tubing pressure of 1375 pounds and a casing pressure of 1100 pounds from 43 feet of Miocene sand at 8134 to 8177 feet.

The well, opened up after being shut in for several days, on a one-hour gauge flowed 88.4 barrels through a ⅜-inch choke, with a tubing pressure of 1200 pounds and a casing pressure of 1000 pounds. Gas/oil ratio was 670 to 1. The showing of this discovery well for the hour gauge indicates it would make over 2100 barrels daily through a ⅜-inch choke, probably the best showing of any discovery well in South Louisiana through this size choke.

A Geophysical Prospect

Quarantine Bay prospect was found with reflection and refraction seismograph by Gulf Refining Company and Humble Oil & Refining Company in 1929. Little development took place in the area until State QQ-3 was drilled to 8202 feet. Sand showing oil was logged at 8134 feet to 8144 feet, where 9⅝-inch casing was set. The hole was cored to the bottom, finding additional sands which showed oil.

Possibility that Welsh field, Jefferson Davis Parish, would be extended three-fourths mile northwest and a new sand discovered was strong last week when Humble Oil & Refining Company logged sand showing oil in Stegall 1, Section 20-9s-5w, from 6989 to 7000 feet. Three drill stem tests of the sand were attempted, but each time the tool slipped. It was decided to drill deeper and then test the sands later. Last week the semi-wildcat was drilling in shale at 7085 feet.

If Humble Oil & Refining Company's Stegall 1 is a commercial producer from the new sand it is anticipated that the field will witness the same development as that of Jennings in Acadia Parish. It is recalled that a new sand was discovered on the southwest side of Jennings, the oldest field in South Louisiana, and the field is now the most active in the area with 12 or 15 rigs at work.

On the south flank of Darrow dome, Ascension Parish, Humble Oil & Refining Company completed at 6985 feet its second well in the deep sand. Gumble 12, Section 33-10s-2e, made 28 barrells per hour through a quarter-inch choke, with a tubing pressure of 1300 pounds and a casing pressure of 1400 pounds.

SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANSE LA BUTTE—		
Butte Oil Co., Billeaud 1	6	810
Louisiana Crusader, Central Oil Co., 1	260	1610
BAYOU BLUE—		
Humble, Kurzeg 1	*	lcn.
JENNINGS—		
Frank Bennett, United Brethren and Christ 1	440	6821
W. T. Burton, Robira 4	480	6502
Austin Taylor, Grace 1	224	3715
GIBSON—		
Shell, Realty Operators 3-B	997	9500
LAFITTE—		
Texas Co., L. L. E. Lafitte 7	1286	10,092
POTASH—		
Humble, Orleans Levee Board 20	*	1163
Orleans Levee Board 21	*	900
VENICE—		
Tide Water, Manhatten Fruit Co. 4	360	7150
ACADIA PARISH—		
Magnolia, Duson 1, Iota prospect, 14-8s-2w	*	8753
LAFOURCHE PARISH—		
William Helis, City of New Orleans 2, Marchand salt dome, 19-23s-23e	*	9660
PLAQUEMINES PARISH—		
Gulf, State QQ 3, Quarantine Bay, 17-19s-17e	845	8177
WEST FELICIANA PARISH—		
Cavalier Oil Co., Haffner et al, 62-3s-2w	*	lcn.

*Failures; †Junked; ¶Million cu. ft. gas.

Venice Extended North

Venice dome, Plaquemines Parish, was extended north last week when Tide Water Associated Oil Company completed its second well in the new field. Manhatten Fruit Company 4 is making 15 barrels of 40 gravity oil per hour from Miocene at 7135 to 7150 feet. The oil is flowing through a 5/32-inch choke; tubing pressure is 600 pounds and casing pressure, 350 pounds. Gas/oil ratio is 500 to 1.

William Helis abandoned a second test on Marchand salt dome, Lafourche Parish, last week. City of New Orleans 2, Section 19-23s-23e, was drilled to 9660 feet in salt after logging top of the formation at 7959 feet. William Helis' first well was also abandoned in salt.

Fohs Oil Company and Pilgrim Exploration Company will attempt to discover a new sand in State 3, north of production at Lake Long, Lafourche Parish. The well was drilling below 9610 feet last week, hoping to pick up the new sand around 9800 feet. State 3 showed salt water on a drill stem test at 9481 feet.

Magnolia Petroleum Company got a dry hole in Duson 1, Iota area, Section 14-8s-2w, Acadia Parish, last week when no sands of importance were cored. Duson 1 was abandoned at 8753 feet.

Second Location for Villa Platte

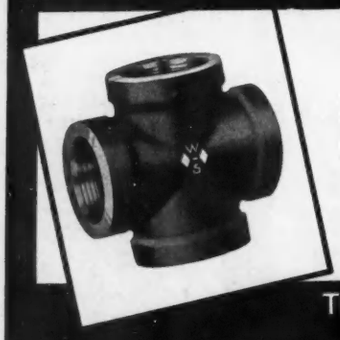
Continental Oil Company announced its second location for the new Villa Platte field, Evangeline Parish. Louisiana Land Improvement Company 1 is a quarter mile southwest of the discovery well, Section 46-3s-2e.

The first good well to be completed at Anse La Butte in about three years is Louisiana Crusader Oil Company's Central Oil Company 1, Section 86-9s-5e, St. Martin Parish. It made 260 barrels of pipe line oil daily through a quarter-inch choke, with a tubing pressure of 175 pounds and a casing pressure of 210 pounds. The 24.8 gravity oil is coming from sands perforated at 1606 to 1610 feet.

The Texas Company is setting five-inch casing below 11,000 feet in State Bateman Bay 1, Section 21-16s-12e, St. Mary Parish.

P. E. FITZGERALD, with Dowell, Inc., Tulsa, spoke on "The Technical Phase of Acidizing" before the Shawnee Geological Society, November 29.

W-S FORGED STEEL FITTINGS



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Rodessa-in-Arkansas extended half-mile northeast.

* * *

Jefferson end rapidly becoming most busy part of field.

Shreveport.—The Miller County, Arkansas, part of Rodessa, was extended a half-mile northeast last week by Texas Canadian Oil Corporation's J. N. Thomas 1, NW SE 12-20-28, completed after casing was perforated from 6080 to 6128 feet, flowing 40 barrels per hour through 37/100-inch choke, without acidization. Elevation is 339 feet. Casing pressure was 750 pounds and tubing pressure, 175 pounds. It was the forty-eighth producer for the Arkansas end of Rodessa. Two other operations in Miller County were testing. Daily average production for 47 wells in Miller County last week was 10,448 barrels.

The Jefferson end of Rodessa, Marion County, Texas, recently given substantial extensions in two directions, is rapidly becoming the most active part of the area. This end of the field, including the Lodi nose, now has 34 producing wells and 30 active operations, 8 new locations having been staked there last week. Daily average production last week from the 34 producers in Marion County, Texas, was 1908 barrels, with one well off production.

On the Louisiana side of the field, Freeman W. Burford prepared to test U. S. Government 1, NE SE SW 6-23n-15w, northeast outpost, which was drilled to 6115 feet and 7-inch casing cemented at 6038 feet. Casing has been perforated in the Gloyd which was topped at 6014 feet, with slightly saturated lime being logged from 6031 to 6042 feet. Hill sand was topped at 5880 feet; elevation is 346 feet. Massive anhydrite was logged from 5505 to 5753 feet. The same operator was swabbing R. A. Terry 4, SE NE 2-23n-16w.

Work at Lisbon boosted by new line outlet

Shreveport.—Seven new wells, three of them outposts, were completed last week in the Lisbon field, to mark a new impetus of activity given that field since completion of a second pipe line outlet on November 15.

A southeast edge well was completed by Gulf Oil Corporation in Patton et al 1, C N½ NW SE 6-20n-4w, which logged five feet of saturated lime from 5267 to 5272 feet, but was completed flowing 684 barrels in first nine hours through 24/64-inch tubing choke. Total depth is 5308 feet; elevation is 242 feet.

An east edge well in the south part of the field was completed in Magnolia Petroleum Company's Corbin B-1, C N½ NW NW 5-20n-4w, flowing 43 barrels hourly through ½-inch tubing choke at 5257 feet, after logging porosity from 5242 to 5256 feet; elevation is 240 feet.

A north edge producer was added by Harry Hanbury's Vaughn E-1, C S½ NE SE 25-21n-5w, completed at 5222 feet flowing 231 barrels in 12 hours through 27/64-inch tubing choke.

With 155 producers, Lisbon has yet to have an abandonment, except one junked hole and although poor porosity has been logged in southeast and northeast edge wells all so far have been commercial wells after acidization. The field will be one year old December 25.

Three North Louisiana wildcats interesting

Shreveport.—Three wildcat tests to the Glen Rose or below in North Louisiana were at interesting stages last week.

In Lincoln Parish, E. T. Oakes, H. D. Easton and associates' Griggs 1, C SW 36-18n-1w, logged top of anhydrite stringer at 4253 feet, with elevation of 199 feet, massive anhydrite from 4493 to 4713 feet and was coring below 4921 feet. Top of anhydrite stringer was 247 feet higher than expected from correlation with the nearest test eight miles away but thinning out of the chalk and red beds was noticeable and considered more important than the correlation.

In Caddo Parish, Blanchard district, A. O. Olsen and associates' Sharpe 1, C W½ NW 15-18n-16w, cemented 7-inch casing and prepared to test at 5624 feet after logging one foot of dense oolitic lime, four feet of porous oolitic lime with a distillate odor and a showing of gas and three feet of dense lime with porous streaks and some odor from 5614 to 5624 feet.

Joe Modisett and associates' Frost Lumber Company 1, C NE SW 14-21n-1e, Union County, in the Schuler "trend" continued to check favorably with tests at Schuler and was drilling red shale at 6026 feet.

Plan deep test three miles west of Lisbon

Shreveport.—R. E. Logan and D. M. Chapman have announced plans to drill a 7100-foot test in Section 5-20n-5w, 3 miles west of production in the basal Glen Rose lime oil producing field at Lisbon, Claiborne Parish, which produces from the 5150-5350 foot level. Operators plan to start the deep test by next May 1.

In Jackson Parish, Seaboard Oil Corporation has assigned 540 acres in Township 15 north, 3 west, to J. G. Monk. Sun Oil Company is paying renewals on its block in Township 16 north, Range 1 west but is returning leases in Townships 14 and 15 north, Ranges 1 and 2 west to the landowners.

H. J. Furlong, Jr., and associates have taken over a block in Morehouse Parish from H. E. Rondeau and associates, and will deepen Clark 1, Section 10-20n-7e, from present depth of 3740 feet.

In Catahoula Parish in Township 9 north, Range 7 east, Wilcox Oil and Gas Company is returning its large block of leases to the fee owners.

Seven permits issued for Louisiana drilling

Shreveport.—Seven drilling permits were authorized last week by the minerals division, Louisiana Conservation Commission of which five were in North Louisiana divided among the following parishes: Caddo, 3 (none in Rodessa); Claiborne, 1, in Lisbon; and Morehouse, 1. The two in South Louisiana were both in Acadia Parish.

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CADDO PARISH (Rodessa)—		
Standard of La., Gibson 1, 10-23n-16w	450	5947
CLAIBORNE PARISH (Lisbon)—		
Atlantic, C. M. Patton C-2, 29-21n-4w	1900	5203
Harry Hanbury, Roberta Vaughn E-1, 25-21n-5w	462	5222
A. O. Olsen, English 1, 29-21n-4w	360	5204
T. F. Patton A-5, 30-21n-4w	1440	5206
LINCOLN PARISH (Lisbon)—		
Gulf, Patton et al 1, 6-20n-4w	1800	5308
Magnolia, Corbon B-1, 5-20n-4w	1032	5257
Red Iron Drilling Co., T. F. Patton 2, 6-20n-4w	800	5256
CADDO PARISH—		
A. R. Hancock, Helpman 1, 16-21n-16w	50	1010
Frank Perkins, Stiles A-2, 33-21n-16w	100	1879
Simplex Oil Co., Glassell 12, 10-20n-15w	25	2195
Geo. W. Montgomery, Caddo Levee Bd. 1, 11-19n-15w	sw	2390
Killam & Smith, J. J. Hart 3, 29-12n-16w	*	1089
La. Oil Prod. Co., Muslow B-9, 4-20n-15w	20	2182
P. A. Singlust, Starr-Brown 2, 28-20n-16w	*	1820
DE SOTO PARISH (Naborton)—		
W. T. Ccleman, Prudhomme 1, 29-12n-11w	¶10	2755
RED RIVER PARISH—		
Jack Lent et al, Chicago Coal & Land Co 1, 17-13n-11w	*	1613
SABINE PARISH (Converse)—		
Major Oil Co., O. V. Graham 1, 19-9n-13w	50	1710
UNION PARISH (Monroe)—		
J. & H. Oil Co., Union Power Co. C-6, 16-21n-3e	¶2	2265
Union Prod. Co., Fee 1 (No. 105), 6-20n-4e	¶17	2165
WINN PARISH—		
Georgetown Oil Co., J. T. Odom 1, 36-11n-1w	*	1640
WEBSTER PARISH (Cotton Valley)—		
Standard of La., M. F. Davis 7, 23-21n-10w	200	8258
M. E. Gray B-2, 26-21n-10w	336	8117

*Failures; †Junked; ¶Million cu. ft. gas.

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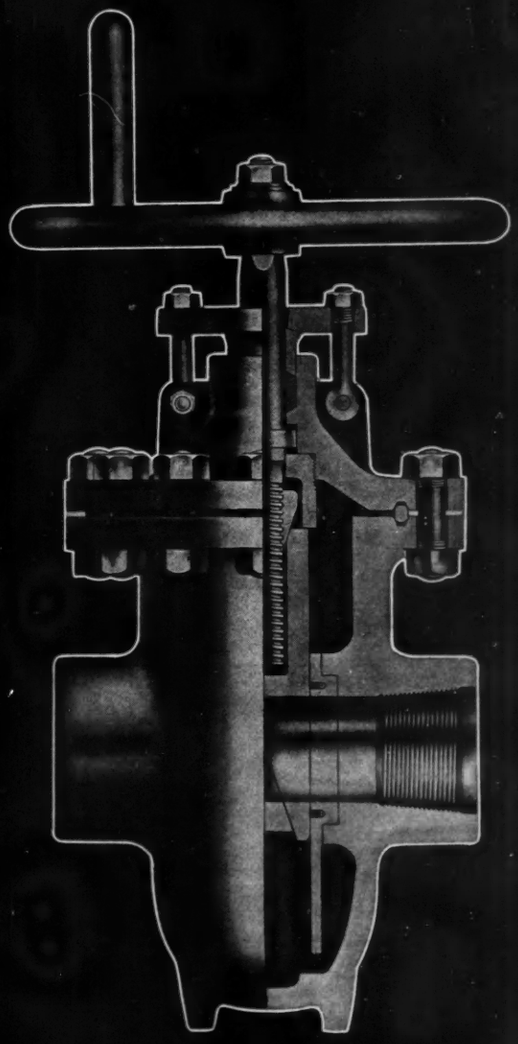

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ARKANSAS FIELDS

Second Lower Marine producer at Schuler

El Dorado, Ark.—The lower Marine "Jones sand" added its second oil producer in the Schuler field, Union County, Arkansas, last week when Alice Sidney Oil Company's D. S. Morgan 2, SE NE SE 18-18-17, was completed after 5-inch casing cement at 7575 feet was perforated with 36 shots from 7552 to 7568 feet. The well had been plugged back from 7700 feet in Permian lime to 7569 feet. The well gauged 1365 barrels of 32 gravity in the first 18 hours, flowing through 1-inch choke, making 2 percent basic sediment and wash water but no salt water.

This well is one mile northwest of the discovery well in the lower Marine horizon, Edwin M. Jones' Marine Oil Company 1, Section 17-18-17, which made 1300 to 2000 barrels daily of oil and much salt water. This salt water increased appreciably in Jones' well Wednesday but it still netted 1359 barrels of oil in 24 hours. It was completed last summer. Most of the oil produced from this well has run to storage as there has been little demand for it and deep tests at Schuler had been expected to try primarily for the Permian lime which produces heavy distillate flow with gas as indicated by one well in this lower horizon.

The total cumulative production from all wells at Schuler to November 25 was 906,803 barrels.

Jones' Marine Oil Company 2, SW NW SE 17-18-17, was coring at 7950 feet without having picked up any porosity in the two lower horizons. The same operator's Marine Oil Company 4, SE SW SE 17-18-17, is plugging back to 6845 feet after an unsuccessful fishing job at 7029 feet, and will sidetrack. Lion Oil Refining Company's Marine 1, Section 17-18-17, was drilling shale at 2152 feet and Phillips Petroleum Company was preparing to perforate 5-inch casing cemented at 7687 feet in Ed Gan 1, SW SE NE 18-18-17. Total depth is 7700 feet.

Standard Oil Company of Louisiana's J. P. McKean 1, C SW SW 8-16-22, Permian lime producer in Columbia County, Buckner district, after being treated with acid gauged 961 barrels in 24 hours at plugged-back depth of 7258 feet.

Kerrlyn Oil Company's Barnett 1, SW NE 14-17-20, Columbia County, reached contract depth of 6314 feet and shut down but as it has checked structurally high so far may be deepened to the Permian lime.

Kerrlyn has had a seismograph unit checking acreage in Township 18, Ranges 11 and 12, Union County, and is reported planning a test after January 1 in Section 13-18-12. Others owning acreage in this area are Lion Oil Refining Company, Phillips Petroleum Company and Joe Modisett, all of whom may have an interest in this operation.

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SOUTHEASTERN STATES

Mississippi test has indications another dome

Jackson, Miss. — Southern Natural Gas Company's Angelo Williams 1, NE NW 29-6n-1w, Hinds County, Mississippi, wildcat near Edwards, which logged top of what was identified as a cap rock over a salt or sulphur dome, at 2730 feet, last week was coring in lime still identified as cap rock at 2910 feet; elevation is 182.7 feet.

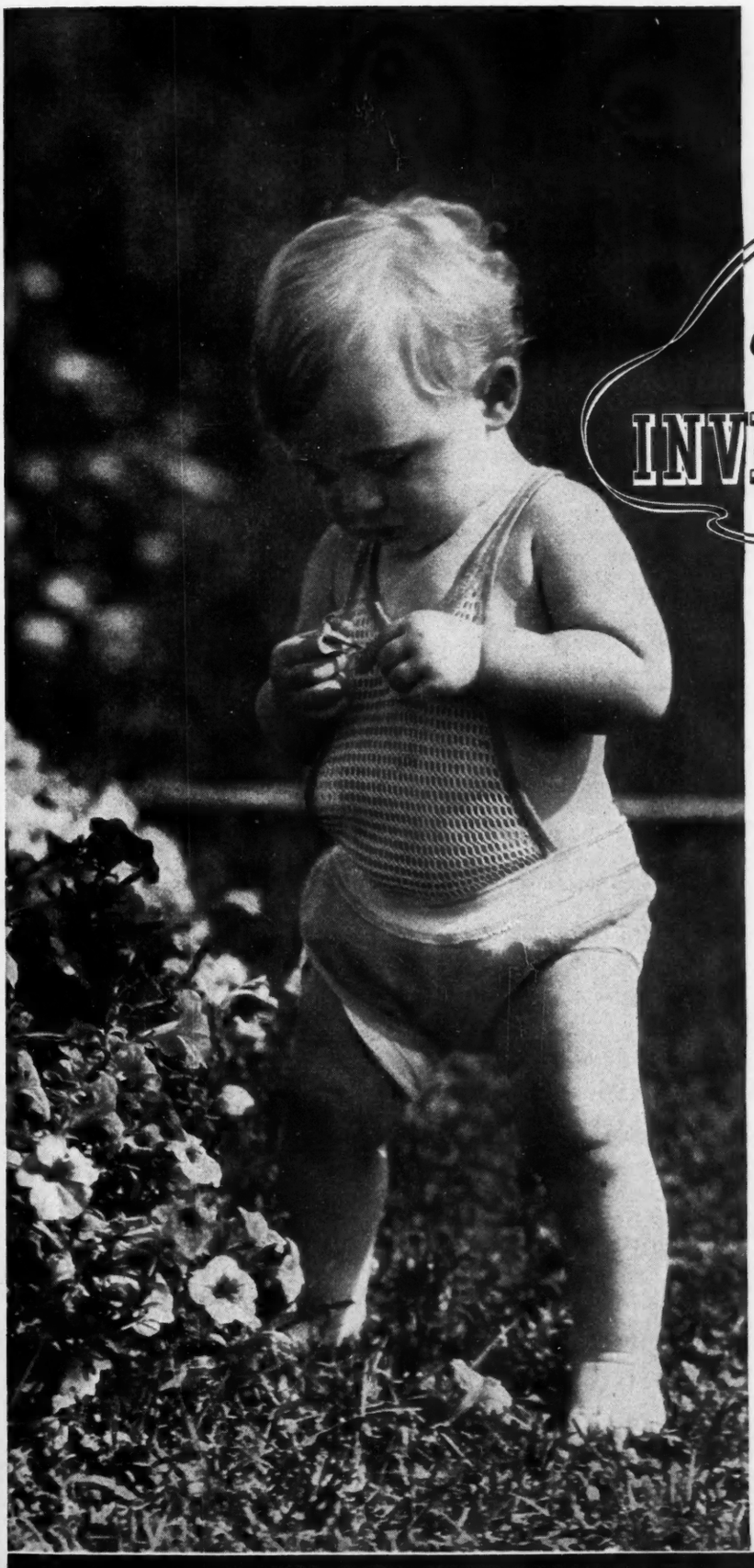
A drill-stem test was made at 2881 to 2900 feet and the test showed 900 feet of mud and sulphur water, with a show of gas in a 30-minute test with ½-inch chokes at top and bottom. This location is on a geophysical high identified after extensive geophysical work. It is reported that three other subsurface highs in the same general area were discovered by the same crew.

In this test Jackson was logged from 170 to 750 feet, Minden, 1280 to 1445 feet and Wilcox at 2631 feet.

Logging of top of the cap rock of the dome at Edwards marked discovery of the second salt dome for Mississippi. Last January, Sun Oil Company and associates discovered a salt dome in Section 28-4n-15w, Lamar County, south Mississippi, and subsequently have drilled four other tests in an effort to get down the flank of the dome. At present these operators' Mrs. Kate Talley, 2200 feet south and 1350 feet east NWc 33-4n-15w, is coring shale at 6381 feet after logging sand from 6373 to 6374 feet and shale from 6377 to 6381 feet.

Geophysical exploration continues active in Mississippi and west Alabama. Gulf Oil Corporation has a gravimeter unit working near Mobile, Alabama, and another similar unit working in Noxubee and Winston counties, central Mississippi. Shell Petroleum Corporation has a gravimeter unit in Covington County, Mississippi, and another in Sumter County, west central Alabama. Union Producing Company has a reflection seismograph unit in George County, southeast Mississippi, and Sun Oil Company has a torsion balance unit in Lamar County, another in Jeff Davis County, and a gravimeter unit in Marion County. In the latter county Phillips Petroleum Company has a torsion balance unit and The California Company has a reflection unit in Walthall County.

El Dorado, Ark.—Four drilling permits were authorized last week by the Arkansas Board of Conservation as follows: Crittenden County—Manning and Martin, Inc., Cartright 1, 1720 feet north and 1550 feet east SWc 16-7n-8e; Miller County—R. W. Newell, Trustee, J. W. Thomas 1, 350 feet west and 167 feet north SEc NW SE 12-20-28; F. F. Earles, General American Life Insurance Company 1, 330 feet north and west SEc SE SW 20-14-16; Nevada County—Union Products Petroleum Company, Haynie 1, 500 feet south and east NWc SE NW 6-14-20.



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CALIFORNIA FIELDS

Fourth new field opened in Kern County.

* * *

New wells in Greeley producing high gravity oil.

* * *

Fourth zone completion in Wilmington discouraging.

Los Angeles. — Three miles northwest of the discovery well of Ten Section field in Kern County, Ohio Oil Company has proven a new field which has been named Canal oil field by the Department of Natural Resources, division of Oil and Gas. This discovery makes the fourth new field proved in Kern County in the past few months, all being discovered by large companies, with comparatively large acreage.

Ohio Oil Company's Kern County Land Co. E-3, with bottom at 8175 feet, flowed 2265 barrels of 36.9 gravity oil, cutting only 0.1 percent. The well was swabbed on production, but two days later yielded 2265 barrels on its first 24 hour test. It is making close to 2,000,000 cubic feet of gas through one inch choke, with 420 pounds on the tubing and 1475 pounds on the casing.

Competitive Offset

Last casing cemented was 7-inch, landed at 8095 feet, then 100 feet of 4¾-inch liner was run, landed on bottom, the last 80 feet being perforated.

Kern County Land Co. E-3 is 330 feet south and 330 feet west from the east quarter corner NE Section 14-30-25. Shell Oil Company is already preparing to spud an offset which is located 1014 feet south and 4276 feet east from the northwest corner of Section 14-30-25.

One Fee Owner for Last Four Strikes

The four last new fields found in California, all in Kern County, are located on land owned in fee by the Kern County Land Company. Practice of the land company is to lease on a 20 percent royalty, no cash bonus, and after the operating company has produced sufficient oil to pay the costs of proving the property, then the operator and the land owner share 50-50 during the life of the lease.

Ohio Oil Company has under lease close to 1700 acres in the general vicinity of the new well and also has other acreage under lease some distance from the new well. Shell Oil Company has under lease three tracts of land, all from Kern County Land Company, between Ohio's new well and the Ten Section field, to the southeast. It is expected that new wells will be widely spaced, and should the new well now being started by Shell Oil Company as an offset prove to be a producer, the two companies will likely reach an operating agreement to prevent unnecessary offsets and lower total drilling costs. The pipe line serving the Ten Section can be tapped easily to serve the new well.

Flows 90 Barrels An Hour

The new wells in the new Greeley field of Kern County, almost completely controlled by Standard Oil Company, are producing very high gravity oil, due mostly to large volume of gas. The most recent completion, Standard's Fleishauer Community 3-1, Section 20-29-26, was completed at 7855 feet, flowing 90 barrels an hour of 61 gravity oil and 55,000,000 cubic feet of gas. When given potential test, new well made 2485 barrels of 59 gravity clean oil, using two chokes. The tubing pressure was 1075 pounds, with 9000 pounds on the casing. The production has been choked to 1150 barrels. Casing record includes 1067 feet of 13⅜-inch, 7670 feet of 9-inch and 122 feet of 6⅝-inch, 79 feet perforated, landed at 7759 feet. The location is 2250 feet north and 1991 feet east from southwest corner of Section 20-29-26. Standard Oil Company of California's No. 11-9 was completed at 7797 feet, flowing to sump, with 18,000,000 cubic feet of gas. Pressure was 1100 pounds on the tubing and 1500 pounds on the casing. The flow started with mud and emulsion, but may clear up. Standard is drilling six other holes in the field and Superior Oil Company is drilling two offsets.

CALIFORNIA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
SANTA MARIA VALLEY—		
Hancock & Bush, Wylie 1	600	5008
Signal O&G Co., Liben 1	1050	4220
York Oil Co., Doane 1	625	4464
GREELEY—		
Standard, Fleishauer 5	2485	7855
KERN FRONT—		
Standard, Ward Fee 8	110	1990
MOUNT POSO—		
Ring Oil Co., Bowles 29-5	380	1760
Shapiro 3	375	1760
Texas Co., Vedder 12	50	1586
ROUND MOUNTAIN—		
Calif. Western Oil Co., No. 8	450	1941
Eastmont Oil Co., Olcese 6	320	1801
Shell, Freeman 16	330	1869
STRAND—		
Ohio, K.C.L. E-3	2265	8175
EL SEGUNDO—		
Geo. F. Getty, El Segundo 1-A	275	7416
Texas Co., Security 5	1135	7405
LONG BEACH—		
Texas Co., Bauman 4	125	4756
WILMINGTON—		
Bankline Oil Co., D.H.C. 24	450	3312
Union Pacific Ry. Co., Offset 47	6950	4065
Offset 56	940	3572
Offset 77	350	3472
Pacific Western, Ronan Com. 1	200	57

*Failures; †Junked; ¶Million cu. ft. gas.

Large Wilmington Well

Union Pacific Railway Company completed one of the largest wells for Wilmington field when Offset 47 came in for 6951 barrels of 27.4 gravity oil. It was completed at 4065 feet, in the third zone, with 8⅝-inch cemented at 3535 feet. This company, drilling six wells in the field is preparing to start eight others. Pacific Western Oil Corporation's Ronan Community 1, deep test, has been completed at 5704 feet for 200 barrels on the pump, producing from the fourth zone in the main field. Its action is not very encouraging for further deep drilling. It is producing through 210 feet of perforated, the oil being 27 gravity, clean. The five recent completions at Wilmington furnished 8890 barrels of new oil, but of this total one well accounted for 6950 barrels, indicating that new completions are not up to the average earlier in the life of the field.

El Segundo field in Los Angeles County is still erratic; some wells are large, others are small. Among the recent completions, Apex Petroleum Company's Elsie Community 1, was completed at 7103 feet for 1400 barrels of 23 gravity oil. Ohio Oil Company's Gough 9 came in for 600 barrels at 7320 feet, while Ruchti Petroleum Company's Ruchti 4, with bottom at 7099 feet, was good for only 225 barrels on the pump. Standard Oil Company's Refinery 4 went to 7474 feet, but failed to flow after 72 hours of swabbing. Twenty-one wells are actively drilling in the field and five more are to start soon.

Deep Test Fishing

Kettleman North Dome Association's No. 4-18J, deep edge test for Kettleman Hills, north dome, has recovered stuck drill pipe and is fishing for drill collar and bit. This hole is bottomed at 11,746 feet. It is understood more hole will be made. Superior Oil Company's deep test, Huffman 5, Section 29-21-17, in the main part of the north dome, is drilling at 10,302 feet in hard sand, streaks of which show fair cuts and gas. This is an old producer going deeper, seeking the producing zone penetrated by No. 4-18J.

Electrifying pumping equipment at Fitts

Tulsa. — Bishop Oil Company, operator of a 50-acre R. W. Simpson lease in Fitts pool of Pontotoc County, is engaged in the electrification of pumping equipment. A major share of the installation is complete, although the generator in present use is temporary, a larger unit being on order. Bishop Oil Company is the fourth producing firm to install electric pumping motors supplied by individually owned systems.

New Types of Fields Revive California Oil Possibilities

By BRAD MILLS, Associate Editor

Recent favorable developments in the San Joaquin Valley emphasize the importance of this district as a deep oil reserve. The discovery of one field at a depth of more than 11,000 feet, and with still another new field indicated in the same area, the south central portion of the valley is fast becoming dotted with important oil fields. The potential producing area is so vast that the entire district must be placed in the favorable column. With four fields in one small sector, any estimate of reserves for the entire district might fall far short of the ultimate recoverable figure.

CALIFORNIA continues to strengthen its position as a producer of refinable crude oil, recent developments having favorably affected reserves in several producing areas. The upward turn follows a long period of decline, during which no major fields were discovered. The imposing list of recent discoveries was the result of a real necessity for adding to dwindling oil reserves.

The California oil map has changed more during the past 18 months than during the preceding 7-year period, with important discoveries in the most accessible areas reflecting the possibilities of a state that has "come back" several times when a serious reserve decline threatened a shortage of oil.

The recent discovery of three fields in intensely developed or prospected districts indicates that additional producing areas will be opened in trend or "gap" plays between old fields. Two prolific fields in the Los Angeles Basin and one near Santa Maria are located in general areas that were drilled and redrilled prior to their discovery.

Two years ago geologists despaired of finding additional fields in the Los Angeles Basin. A close study of the basin map failed to reveal a single spot that offered unusual promise. Wilmington and El Segundo later appeared in the most unexpected locations to shock the closest students of geology and trend plays.

Schist Play Develops

It is not a reflection on ability to overlook opportunities, provided an important unexpected development is recognized in its true light. California geologists on the whole have been slow to recognize opportunities indicated by the first discovery of a type. When Playa del Rey was discovered, the possibility of an important schist play toward Torrance was not considered seriously, although surface indications pointed strongly to such a development. The first discovery was regarded as too much of a freak and not enough of a reality. The El Segundo field reflects the continuation of an important schist play.

Partial development of fields found during the past 18 months has added heavily to the state's daily output, and reflects a favorable outlook for future wildcatting. The reserve status also has been changed by the heavy yield of oil from new fields, a type of production not anticipated two years ago.

For the first time in several years California finds itself in the midst of a townlot drilling campaign. The Wilmington field, only a stone's throw from Signal Hill, is being developed with all the enthusiasm that accompanied earlier townlot campaigns. The present producing level probably will not support a high sustained production, but other zones may prove even more productive.

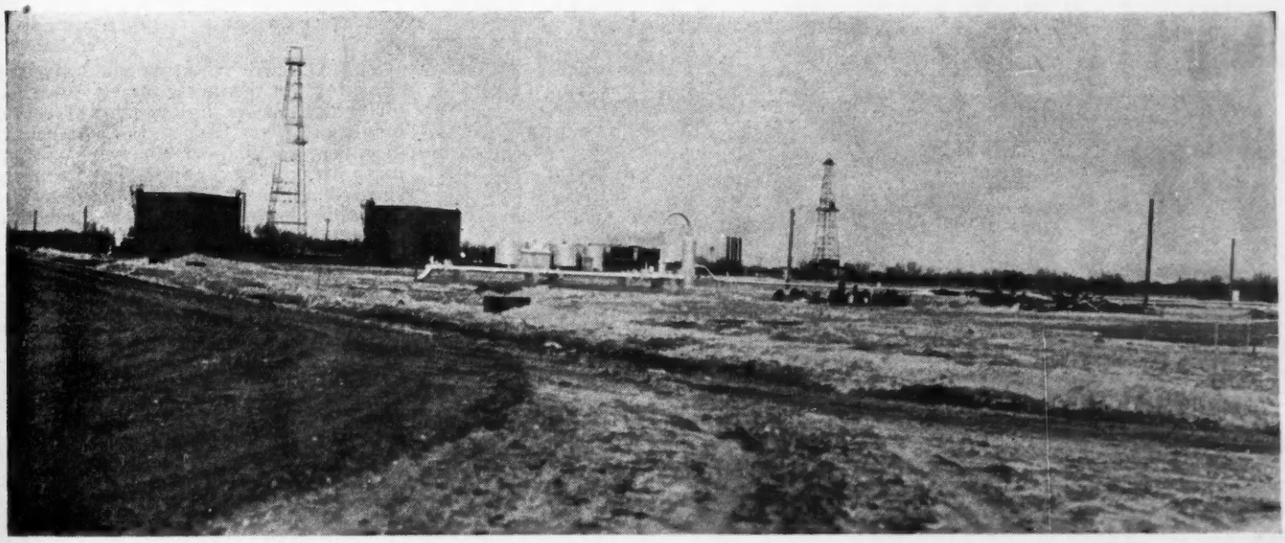
Two years ago a townlot drilling campaign in the Los Angeles Basin seemed a remote possibility. Only additional operations in the old townlot areas appeared in line for this type of development. The Wilmington discovery shows how unexpectedly an oil discovery may change the picture in a congested producing district. The practical operator lives with the hope that there is always room for one more field in every major producing area.

Both the San Joaquin Valley and Santa Maria Valley discoveries are forerunners of heavy development, and possibly even greater discoveries. The opening of new type fields in any major producing district is more important than the discovery of a field of the conventional type. The new San Joaquin Valley fields could hardly be as important from a reserve standpoint as from a type standpoint. Such fields were an absolute necessity in a lagging development program in a promising area.

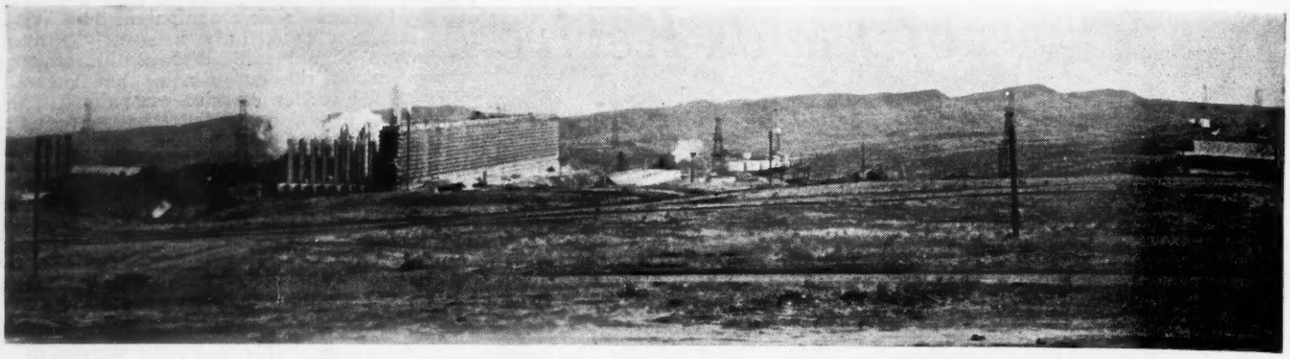
New Fields Expected

California operators are not satisfied with new fields recently opened, and additional discoveries should be expected during the next year. Reconnaissance work now under way practically guarantees drilling in several districts that should yield additional fields. It is possible that development will take an unexpected trend, such as that which follows every discovery of a new type. Still another new kind of field is indicated by valley developments near Coalinga, and the hilly fringe sections along the San Joaquin Valley may yield surprises of a major type. A heavy trend play in the heart of the valley may change the course of development now indicated by the two discoveries in Kern County.

The major discoveries of the past two years have been reflected only re-



The Ten Section field, first producing area of its type, is located in the bed of San Joaquin Valley. This was a geophysical discovery.



Oil recently was found in Eocene sands below 10,700 feet, on the extreme northwest flank of the North Dome at Kettleman Hills. This discovery places a new value on California's largest field.

cently by lesser discoveries in the same districts. A more intensive "feeling around" for new fields has followed the opening of the new major fields now under development, and a trend play in the San Joaquin Valley would follow another discovery lining up with the two most recently found. Various gaps between fields in the Los Angeles basin will receive increased attention as the result of an indicated accumulation or extension between the Long Beach and Dominguez field, a very narrow gap for operations.

The discovery of oil at Wilmington was delayed several years by the belief that oil showings near the Los Angeles harbor were from a continuation of sand stringers belonging to the Torrance field, located several miles to the west. Geologists had for several years attempted to extend the Torrance field to include the shallow production obtained near Wilmington. The field represents a separate structure, with the center probably extending oceanward more than landward. Located in the center of the harbor industrial district, the field has been rapidly developed, and recently produced more than 50,000 barrels of medium-gravity oil per day. The rapid development of this townlot field has heightened interest in the possibility of finding other fields along the extreme coastal strip. The fact that first production was developed at a shallow level adds to reserve possibilities of this new field.

Geology Better

Geology, good and bad, has affected the discovery rate in California. The most recent favorable developments have been the result of good geology, well backed by practical operations. Drilling in several areas has been delayed because of the belief that a certain unfavorable condition would be found. The entire history of California operations is colored with decisions that postponed important discoveries, but such blunders probably are not more numerous than in other oil producing states. When an oil field is found, the effort seems a simple matter, and the tendency is to wonder why the discovery was delayed so long. The discovery of new fields in California has become a difficult and highly technical task, and only sound reasoning and heavy drilling risks will bring favorable results. The state, however, is in a favorable position for increasing its reserves in at least three of the most promising producing sections.

The discovery and development of the Santa Maria field, a prolific producing area in the Santa Maria Valley, definitely establishes the importance of all flat districts in the vicinity of oil fields. Development of one kind or another has taken place in this district for 45 years, yet the comparatively shallow Santa Maria field passed virtually unnoticed because of lack of surface contrasts. About two dozen wells were drilled over a 20-year period, and the valley was checked with core holes by four major companies. The first geophysical work done almost 10 years ago showed formation irregularities, but operators could not interpret the data.

The first important well was completed in 1936, and since that time development has been steady and successful. Twenty-eight wells have been completed in the field, and the indicated potential is above 30,000 barrels daily. It is believed that the field will be extended to include a productive area of 3000 acres, and a daily production of 120,000 barrels probably could be developed by intensive drilling of large leases. The field is an important heavy oil reserve, and already has become a market factor. The new field may be the forerunner of others along the coast between Los Angeles and San Luis Obispo, with Ventura and Oxnard being important intermediate points.

The Oxnard plain, particularly the edges of the flat area, may yield good oil fields, despite unfavorable developments of several years ago. The recent discovery of oil near the town of Oxnard attracted companies that formerly showed no interest in the district. The Oxnard plain is too near producing districts to be ignored, but its importance is yet to be shown. The flat area offers an ideal working spot for all types of geophysical exploration.

The tapering off of discoveries in the bed of the San Joaquin Valley, following the opening of two good fields last year, should not be taken as an indication that the district has declined in favor. Both the Ten Section and Greeley fields, located only a few miles apart, are important reserves, and the most recent developments have not lessened their standing. These fields undoubtedly are forerunners of other major fields in the bed of the valley.

Such fields as Elk Hills and Lost

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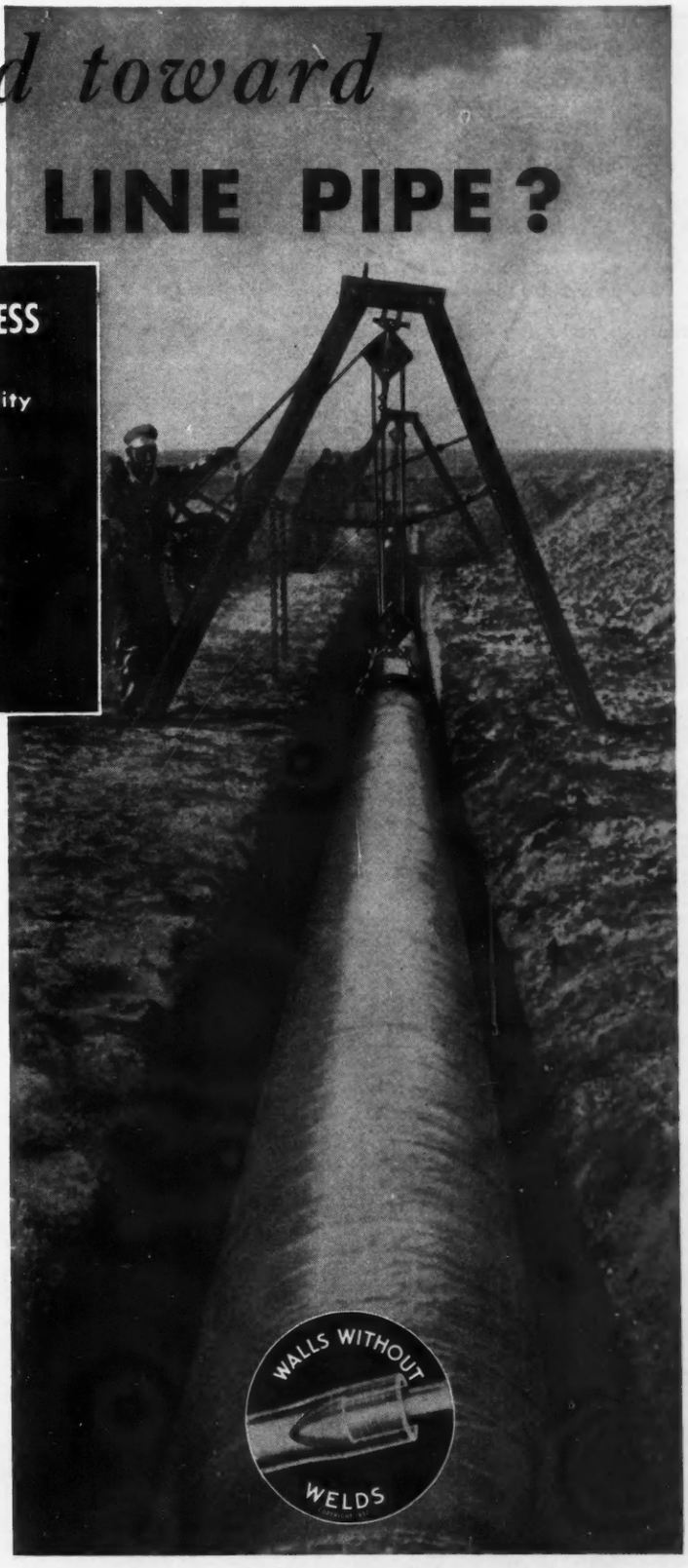

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Hills offer substantial evidence that trends will be established in the valley proper. Both the Elk Hills and Lost Hills fields could have been buried easily by the valley fill, just as the Greeley and Ten Section fields were buried by more recent deposits. Kettleman Hills, in reality a valley field, barely escaped falling out of sight. A large number of structures, all covered by the level valley floor, doubtless will be found by the various geophysical crews now working in the district.

The fact that the south end of the San Joaquin Valley is fringed on both the east and west sides with oil fields has long indicated the presence of fields in the bed of the valley. Until recently geologists believed the valley fill too deep for successful prospecting, but all of these early notions have been dissipated.

More than 30 geophysical crews were busy during recent months, and all level parts of the state were prospected to a limited extent. Most of the activity was confined to districts that already had shown promise or had yielded production.

New reserves will be developed in at least two of California's three major producing districts, and additions in the third district is likely. A new type of addition, such as that opened in the Miocene near Saugus, is more than a remote possibility. Deep structures in the old shallow producing districts have been neglected during the development of deep fields in the newer producing areas. Important deep production between Ventura and Newhall may be found, few shallow producing districts in California having failed to yield oil from deeper formations.

The almost sudden ending of oil production along the west side of the San Joaquin Valley, as marked by the Coalinga field, has long puzzled operators who have hoped to extend the trend northward. It hardly seems possible that production can completely end with a field so important as the Coalinga field has been. A large amount of geophysical work has been done along the valley's edge, following extensive earlier work by geologists, but no commercial discovery has been made. Western Fresno County still looks promising as an additional oil reserve. Good oil showings have been encountered in wells that caused flurries of excitement. The formations change and thin out north of Coalinga and Kettleman Hills, but they are nevertheless favorable for the accumulation of oil. Activity now under way has shown the district in a more favorable light than was indicated by some of the older abandonments. The vastness of the area has been the chief stumbling block.

Deep Possibilities

Deep formations in the old producing fields should not be overlooked as a source of future reserves. Almost every major producing field in the state stands a good chance for production at a level below the deepest developed formation. Such fields as Santa Fe Springs, where seven distinct major producing zones have been developed, are still in line for deeper production. Any of the old fields may furnish a surprise in the future. It is known that such fields as Inglewood represent an important oil reserve. Deep production in several fields has been greater than the original production, and in at least two fields now under development there is likelihood of important deep additions to reserves. In not a single major producing field in California has a well been drilled to a depth that denoted the last hope for still deeper production. Additional deeper production may be doubtful, but the untested formations still offer a chance for new reserves. The failure to completely penetrate all formations that are capable of producing oil reflects the great thickness of the favorable strata in the major fields.

The discovery of commercial production in the Eocene sands at Kettleman Hills was one of the most important developments of the year. All previous production had come from the shallower Miocene sands and shales. The deeper production came from an outpost well that was entirely outside the producing limit of the shallower formation, and the new flow of oil indicated a heavy reserve not formerly included in Kettleman Hills estimates. The oil sand was encountered below 10,700 feet in the outpost well, but it should be found much higher in inside wells. It is believed that the Eocene sands will prove very productive at Kettleman Hills.

New fields and deeper producing zones in old fields have checked the reserve decline in California, and future discoveries will go a long way toward maintaining a safe balance during the next two years.

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SELF-LOCKING NUT

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tighten it up—
and there it stays

Vibration just can't shake it loose

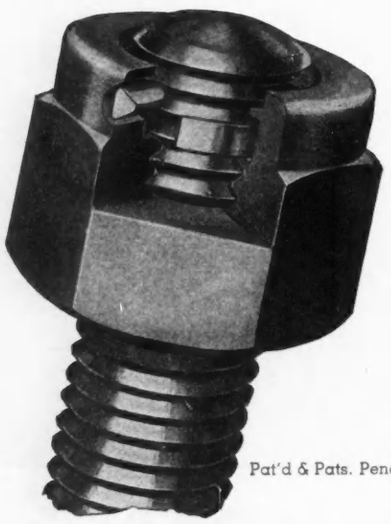

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Fig. 1510 "Unshako"
Self-Locking Nut

Cutout section shows the Locking Ring in position

It will pay you to find out all about "Unshako", the nut that can't work loose even when subjected to severe and continuous vibration—yet backs off readily with the aid of an ordinary wrench. It's self-contained—no separate pins or washers to be forgotten or lost. A built-in, self-locking ring or floating thread that works on the brake band principle, does the trick.

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SPECIALISTS 20 YEARS
in Pipe Line Pumps

Fig. 601. GASO Walking Beam Pump—30.30 to 55.10 Bbls. per Hr.

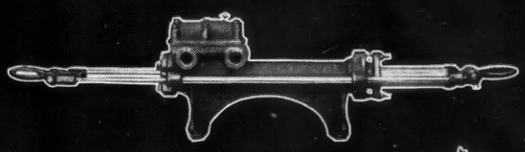

Fig. 201. GASO Rodline Pump — 30.96 to 41.28 Bbls. per Hr.

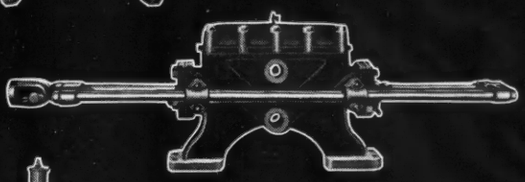

Fig. 301. GASO Piston Power Pump—31.73 to 157.36 Bbls. per Hr.

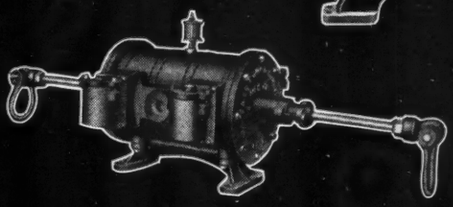

Fig. 604½. GASO Rodline Pump for Gas or Vacuum—26-28 Points Vacuum

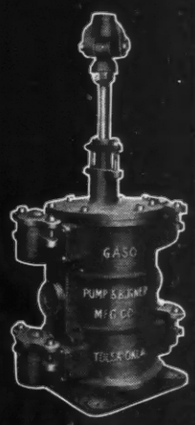

Fig. 604. GASO Walking Beam Pump, Gas or Vacuum — 26-28 Pts. Vac.

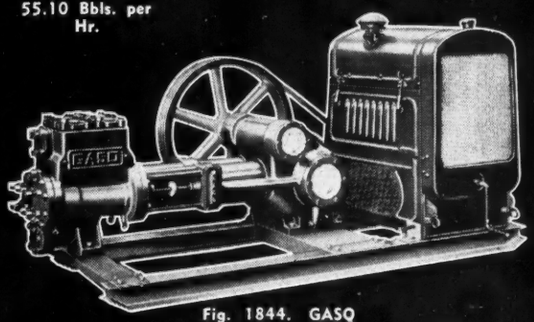

Fig. 1844. GASO Duplex Piston Pump 50 to 288 Bbls. per Hr.

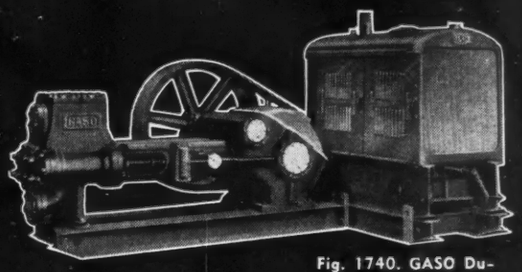

Fig. 1740. GASO Duplex Piston Pump — Gasoline Engine Drive, 54 to 250 Bbls. per Hr.

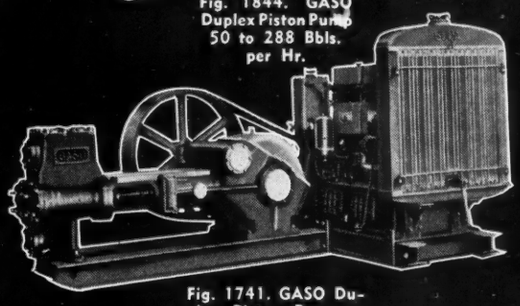

Fig. 1741. GASO Duplex Piston Pump — Diesel Engine Drive—54 to 502 Bbls. per Hr.

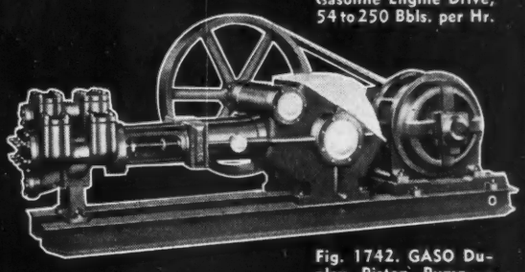

Fig. 1742. GASO Duplex Piston Pump — Electric Drive—54 to 250 Bbls. per Hr.

See GASO Section, 1937 Composite Catalog, or Send for Complete Catalog

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NEW MEXICO

More Vacuum development to bring lime extension.

* * *

Field work in Lea County registers gain during week.

Hobbs., N. M.—Continuous drilling program proposed by The Texas Company on its state permits in the Vacuum pool, which has four oil producers in the 4500-foot lime, forecasts the entry of The Texas-New Mexico Pipe Line Company, an affiliated concern, with a trunk line connection within a few months. The Vacuum area is slated to become the most active drilling center in Lea County during 1938. Bulk of the acreage is owned by Magnolia Petroleum Company and The Texas Company, although sufficient is held by other interests to result in competitive drilling.

The Texas Company has started operations on State 1-M, C SE NW 1-18s-34e, half mile west of its State 1-L, completed recently with a natural flow of 820 barrels initial from Permian lime at 4297-4497 feet. The latter logged base of salt at 2690 feet, and top of brown lime at 2990 feet, with an elevation of 3998 feet. It extended production 3¼ miles south. The output of this well and three held by Magnolia Petroleum Company is transported by tank trucks to Hobbs field, where deliveries are made to Shell Pipe Line Corporation. Magnolia Petroleum Company's State-Bridges 3, C SW SE 23-17s-34e, logged top of anhydrite at 1573 feet and was drilling at 1580 feet. Skelly Oil Company's State 1-J, C NE NW 31-17s-35e, entered the anhydrite zone at 1517 feet, with an elevation of 3987 feet, and cemented pipe at 1540 feet.

Entry of The Texas-New Mexico Pipe Line Company into the Vacuum pool will require about 15 miles of trunk line, involving a north extension from the Lynch pool, else northwest from the Monument field. The latter route will likely be taken, as intermediate acreage between the Monument and Vacuum areas embraces a separate structure, based upon geology and geophysics, that is destined to be explored with one or more tests. Oil traffic through the Texas-New Mexico Pipe Line Company's carrier that serves the Lynch pool is to be increased as result of the company's purchase of the Trans-Pecos Pipe Line Company's 33-mile, 5½ inch line, which connects with fields in eastern Eddy County. The latter concern has been marketing 3500 barrels daily. Contracts were held with Italian refineries, and facilities of the Texas-New Mexico Pipe Line Company were used in reaching tankers at Houston.

Field Work Gains

Field operations in Lea County registered a slight gain the past week with nine tests authorized for six oil areas. The Mattix sandy-lime field accounted for three, including Western Gas Company's R. W. Cowden 1, SE SE SE 30-23s-37e, north offset to big extension made recently by Repollo Oil Company's Cowden 1. C. T. McLaughlin et al's Imperial Royalties Company 1, NW SE NW 9-24s-37e, and Plains Production Company's R. L. Mosley-Repollo 2, SW NE SE 34-24s-37e, offset completed wells.

Lea County operators served by Shell Pipe Line Corporation have experienced delay in the removal of lease tanks as a sequel to the closing of Shell Petroleum Corporation's refinery at Houston. The former is the largest crude buyer in the sandy-lime belt, and may be forced to prorate its runs until the labor difficulties at the refinery are settled, as about 50 percent of its crude takings from the Permian basin district were utilized by the plant. The remainder is moved northeast from McCamey terminal to Oklahoma and middlewestern points.

Nitro crew engaged in shooting Continental Oil Company et al's Elliott 3-B-6, C SE SE 6-22s-37e, west portion of the Penrose field, narrowly escaped fatal injuries when the well made an unexpected oil head after lowering shell to the 2900-foot level. The shell was forced to the surface, and the explosion destroyed the derrick. The same companies' Elliott 2-B-6, CNE SE 6-22s-37e, flowed 30 barrels hourly after 500-quart shot at 3550-3796 feet, and later gauged 121 barrels initial through

NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
EDDY COUNTY—		
Repollo, McIntyre 2-D	20	3280
LEA COUNTY (Eunice)—		
Stanolind, O. J. Gilluly 10-A, se se ne 24-20s-36e	600	3865
O. J. Gilluly 11-A, c sw ne 24-20s-36e	500	3871
LEA COUNTY (Hardy)—		
Herschbach Drl. Co., E. L. Alexander 1, c ne sw 5-21s-37e	120	3760
LEA COUNTY (Mattix)—		
Continental et al, Jack 1-A-21, c sw sw 21-24s-37e	840	3556
LEA COUNTY (Penrose)—		
Shell, Rinewalt 2, c ne nw 4-22s-37e	400	3760
W. H. Street et al, Wood 2, c sw ne 22-22s-37e	115	3692
LEA COUNTY (Wildcat)—		
Humble, F. M. Saunders 2, c nw nw 9-22s-34e	*	4265

*Failures; †Junked; ¶Million cu. ft. gas.

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KEROSENE
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GULF COAST
HOUSTON, TEXAS; NORCO, LA.

MID-CONTINENT
EAST CHICAGO, IND.; WOOD RIVER, ILL.; ARKANSAS CITY, KANSAS

SHELL

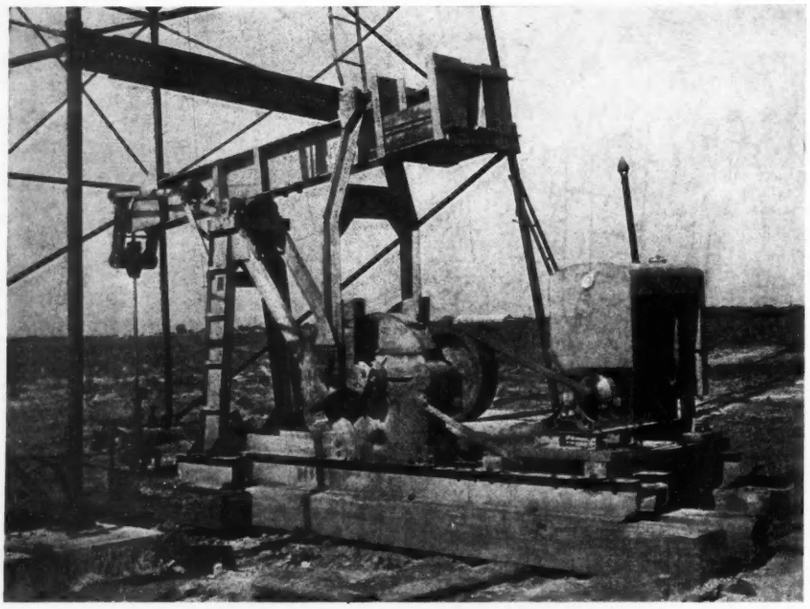
25/64-inch tubing choke. It has an elevation of 3458 feet. Operations have been started on W. H. Street et al's Wood 3, C NW NE 22-22s-37e, and Gulf Oil Corporation's Stebbins 2-B, C NW NE 5-22s-37e.

Largest completion for Lea County the past week was credited to the Continental Oil Company et al's E. E. Jack 1-A-21, C SW SW 21-24s-37e, west portion of the Mattix field, which flowed 35 barrels of 38.5 gravity oil hourly through ¾-inch choke. Production is from sandy-lime at 3420-3556 feet, and this section was shot with 380 quarts of nitro.

Ability of wells in the Rhodes pool, second oldest producing area in Lea County, to convert from gassers to oil producers after pulling on the sweet gas for a period is to be given another trial. The Texas Company et al have started operations on C. C. Cagle 2, C SW SW 15-26s-37e, east offset to Great Western Producers, Inc.'s State 1, which is spraying five barrels of oil daily with a potential flow of 50,000,000 feet of gas. The latter was recently deepened from 3277 to3315 feet, or 323 feet sub sea. The Texas Company et al's Rhodes 1, completed in 1927 at 3213 feet, and a more recent test on the same site, are making their allowable of 66 barrels daily each, although originally completed as gassers.

Operators in the Monument and Eunice areas are not matching offset completions as promptly as heretofore, and a large number of tests are pending on edge locations. Continental Oil Company et al made the only location reported the past week in starting work on Reed 3-B-24, C E½ SW SW 24-20s-36e. This odd spacing was used by the south offset.

Low Cost Power



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MICHIGAN FIELDS

Michigan drilling work above winter normal

Mt. Pleasant, Mich.—Major testing in two new Gladwin County townships where commercial wells have been drilled within the past three months was rapidly shaping up this week. In Secord township, (19n-1e) three tests have started following completion of Whitehill, Drury & Clovis' Bosley 1, Section 11, which is producing from 40 to 50 barrels from the Dundee limestone on the pump.

This week Sun Oil Company and Mammoth Producing & Refining Company leased a 1250-acre block, jointly, from Frank Wixom and Edenville Power Company, and immediately negotiated a deal with Daily Crude Oil Company to drill a Dundee test.

Mammoth Producing & Refining Company and Gordon Oil Company are moving in for tests in Bentley township (17n-2e) following completion of Durham & Jones' LaFurgey 1, SE SW NE Section 20, a half mile north of the Hand-Smart discovery Dundee well. LaFurgey 1 topped Dundee at 3434 feet, 6 feet lower than the discovery well but pay lime came in at 76 feet with about 2000 feet of oil natural at 3546, feet. It is being acidized. The discovery well in Bentley is producing 45 barrels daily on the pump.

New permits authorized by the state fell to four this week, lowest point in more than a year. Despite this projected new tests are expected to keep drilling activity above the winter normal. There were 265 drilling tests active this week as compared to 242 a year ago.

MICHIGAN
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ALLEGAN COUNTY—		
Arnold & Cochran, Arnold 1, nw sw nw 26-4n-16w	*	1468
Pioneer Crude Dev., Commossaris 1, nw sw ne 9-4n-16w	*	1688
D. H. Water, Clark 1, sw se se 16-4n-13w	400	1598
GLADWIN COUNTY—		
McClanahan Oil Co., Reua 1, ne ne sw, 11-17n-1e	*	3727
Sun Oil Co., Rabb 7, se se nw, 10-18n-1w	350	3657
Hart Oil Co., Soldan 2, se ne se 12-18n-1w	135	3632
Rex Oil Co., Smith 1, ne nw nw 35-18n-1w	200	3589
Charles E. McLaughlin, Simmons 1, sw sw sw 28-19n-2w	*	3980
MIDLAND COUNTY—		
F. W. Brown, Andrews 1, ne ne nw 27-16n-2w	loc	ab.
John C. Newell, Reid 1, ne nw se 10-14n-2w	*	2455
ISABELLA COUNTY—		
Utilities Pipe Line Co., Mitchell A-1, se se se 29-15n-6w	¶3/4	1444
MONTCLAIR COUNTY—		
W. C. Taggart, Knapp 1, c ne 17-12n-9w	¶1	1136
NEWAYGO COUNTY—		
Muskegon Dev. Co., Carlson 1, ne sw se 9-16n-12w	*	3392

*Failures; †Junked; ¶Million cu. ft. gas.

IMPORTANT WILDCAT TESTS

ALABAMA

GREENE COUNTY—Greene County Dev. Co.'s R. C. Lett 2, se nw 5-21n-2e, sd 115 ft.

HOUSTON COUNTY — Rice O&G Co.'s Oakley Est. 2, se nw sw 9-3n-29e, arr set 7-in csg, td 4975 ft.

MOBILE COUNTY—J. C. Prine's King 2, ne ne 4-1n-4w, elev 135 ft, 10-in csg 300 ft, arr deepen 1100 ft (1100 ft s of No. 1). Grand Bayou O&G Co.'s J. A. Stafford 1, sw sw 24-7s-3w, lcn.

ARKANSAS

CLARK COUNTY—M. M. Martin's C. L. Cabe 1, nw nw 14-10-20, dr 2200 ft.

COLUMBIA COUNTY—Kerrlyn Oil Co.'s Barnett 1, sw ne 14-17-20, sd 6314 ft, contract depth. Tidewater & Seaboard's C. N. Crumpler 1, nec sw 24-17-19, elev 282 ft, top lower Travis Peak 5420 ft, top lower red beds 7115 ft, top anhydrite 7500 ft, fsh 7568 ft. E. O. Olds' Mary Dennis 1, nw se sw 4-17-21, sd 4513 ft, contract depth.

CRITTENDEN COUNTY — Manning & Martin's Cartright 1, se nw sw 16-7n-8e, mim.

DALLAS COUNTY—L. S. Gist et al's Goodgame 1, se sw sw nw 26-10-16, sd 1158 ft.

DREW COUNTY — Sloan Wells et al's Hardy 1, sec nw 3-14-7, rur.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaGrone 1, ne ne 5-12-26, sdtr, td 2944 ft.

LONOKE COUNTY—J. E. Russell's Gunter 1, se se 17-5-10, claim so 503-8 ft, repr rig 508 ft. Frank Silver's Chambers Est. 2, sw ne sw 17-2-7, wo 1500 ft.

MILLER COUNTY—Freeman W. Burford's August 1, 8-20-27, testing pb depth 6165 ft, old td 6230 ft. F. F. Earles' General American Life Ins. Co. 1, se se sw 20-14-26, mim. Hearell & Burnett's Willie Wallace 1, se nw se 7-20-27, lcn.

NEVADA COUNTY—W. E. Lokey, Tr.'s Purifoy 1, 17-11-20, fsh 2220 ft.

OUACHITA COUNTY — Copenhaver Oil Corp.'s J. E. Evans 1, ne sw 20-11-19, co 1730 ft. O. F. Whittaker's C. C. Guttry 1, se sw se sw 21-15-19, 100 ft oih, wosr, td 2180 ft; C. C. Guttry 2, se nw 21-15-19, mim.

UNION COUNTY — W. D. Wingfield's Southern Kraft 2, sw ne 18-16-14, 7-in csg 2721 ft, testing, td 2728 ft.

CALIFORNIA

DOS PALOS—Bergman Oil Co.'s Ora Loma 1, 12-12-11, sd 6006 ft.

CLOVIS—Central Valley Oil Co.'s No. 1, 1-12-20, dr shale 216 ft.

JACALITOS CREEK—Daughin Dev. Co.'s Boone 1, 20-21-14, dr brown shale 2576 ft.

PANOCHE—J. A. Gauthier's Hubbard 1, 12-14-11, dr shale 511 ft.

JACALITOS HILLS—Jacalitos Pet. Co.'s Associated 1, 14-21-15, td 5120 ft in shale, ran formation tester.

HURON—Pure's S. P. 1, 31-18-17, dr shale 8698 ft.

CIERVO—Superior's No. 1, 20-16-13, grading lcn.

TRANQUILITY—Union's Nicholson 1, 17-15-15, bldg water line.

DEVIL'S DEN—Amerada's Beer 5, 22-26-19, dr brown shale 4654 ft. Den Pet. Co.'s Bates 1, 20-25-19, sd 4716 ft.

LERDO AREA—Arkelo Pet. Co.'s No. 41, 23-28-26, td 10,056 ft, redr to 7780 ft, sd.

WASCO—Continental's K. C. L. A-2, 8-27-24, td 11,584 ft, recovered fsh to 11,497 ft, sidetracking bit; K. C. L. B-1, 12-29-26, td 10,205 ft, redr at 7873 ft. Seaboard Oil-Tide Water Associated's K. C. L. C-1, 26-27-24, sd 10,213 ft.

ROUND MOUNTAIN—Crestmont Oil Co.'s Staley 1, 8-28-29, rur. Fremont Oil Co.'s Olcese 2, 35-28-29, dr silty shale 2751 ft. Los Angeles Cons. Co.'s Olcese-Tavis 1, 4-29-29, sd 3700 ft. D. G. Veeder's Bell 1, 12-28-28, td 1978 ft, pumping 348 bbls 15 gravity oil.

ARVIN—General Pet.'s Houchin 6, 27-31-29, td 7928 ft, shot perforated liner 7240 to 7480 ft, swabbing; Pauley 1, 22-31-29, rur. Petrex's No. 1, 32-31-30, dr shale 1293 ft.

BELRIDGE—General Pet.'s St. Helens 1, 12-28-20, dr shale 4383 ft.

GRAPEVINE—Honolulu Oil Corp.'s Honolulu-Assoc. 33-1, 33-12-19, dr shale 3130 ft. Ohio's T. R. C. D-2, 23-11-19, dr shale 2613 ft. Universal Cons. Oil Co.'s Tejon 1, 33-11-19, dr shale 2790 ft.

STRAND—Ohio's K. C. L. E-3, 330 ft south and 330 ft west from east quarter corner, northeast quarter of section 14-30-25, td 8175 ft, completed for 2265 bbls, 36.9 gravity clean oil. Shell's K. C. L. A-72, offsetting new producer, 1014 ft south and 4276 ft east from northwest corner of Section 14-30-25, spud 11/26.

KERN FRONT—Pacific Oil & Gas Dev. Co.'s Davidson 2, 36-27-27, td 2900 ft, gray sand top Vedder 2890 ft, abn.

McKITTRICK—Par-Mer Oil Co.'s Par-Mer 1, 6-31-22, dr shale 1830 ft. Rocima Oil Co.'s No. 1, 20-30-22, rur.

MOUNTAIN VIEW—Section Six Oil Co.'s Johnston 1, 6-31-29, dr shale 6810 ft.

KERN RIVER—Sleeper Ridge Oil Corp.'s No. 1, 15-29-28, sd 1435 ft.

TEN SECTION AREA—Standard's K. C. L. 15-1, 27-30-26, dr shale 7720 ft.

SEMITROPIC—Standard's Randolph Com. 2, 14-27-23, td 7739 ft, to run formation tester.

McGUNDEN—Standard's Routzong 1, 2-30-28, dr shale 5410 ft.

McFARLAND—Stone & Fried's No. 1, 34-25-25, rig.

SAN EMIDIO—Shell's No. 4-26, 26-11-22, rig.

MOUNT POSO—Summit Oil Co.'s Glide 1, 31-27-28, spud 11/21, dr shale.

GREELEY AREA—Superior's K. C. L. 9, 3-30-26, td 7870 ft, perforated 7560 to 7580 ft, cemented.

MOUNT POSO—Paul Travis' Giffen 1, 10-27-28, td 1331 ft, in oil sand, top Vedder 1293 ft, to run casing.

SOUTH MARICOPA—Texas Co.'s Pioneer 1, 33-11-33, dr gray sand 5117 ft.

GLENN COUNTY—Ohio's Willard 1, 18-20-2, dr shale 1547 ft.

HUMBOLDT COUNTY—Texas Co.'s Eureka 2, 22-3-1, td 7708 ft, plug 5737 ft, flowed 1,300,000 ft gas.

KINGS COUNTY — Pyramid Prod. Co.'s Retherford 1, 27-24-18, dr shale 1376 ft.

MERCED COUNTY—Amerada's Carano 1, 19-10-11, dr shale 5753 ft.

SAN JOAQUIN COUNTY—Standard's Weil-Zucker 2, 25-2-4, dr shale 6230 ft.

SAN MATEO—Wilshire Oil Co.'s Cowell 1, 20-6-5 (Half Moon Bay) dr shale 4602 ft.

SOLAND COUNTY—Amerada's Detering 1, 36-4-2, td 4377 ft, gas shut in, may be wet.

TULARE COUNTY—Magnet Oil Co.'s A. O. G. 3, 29-24-24, sd 7555 ft. Standard's Crocker Est. 1, 6-25-24, lcn abn; Morris 1, 36-24-34, dr shale 10,410 ft. J. F. Wilcox's Sears 1, 29-24-28, dr shale 893 ft.

YOLO COUNTY—Standard's E. E. Hooper 1, 32-9-1, td 5181 ft, redr to 3700 ft, shut in.

SANTA BARBARA COUNTY—O. C. Field Gaso. Corp.'s Continental 2, 4-8-32, td 3830 ft, deepening through liner, dr with oil. Ben Moyle's Arrata 1, 9-8-32, td 3286 ft, tried to pull liner, sd.

MONTEREY COUNTY—Amil A. Anderson's No. 1, 15-24-14, dr shale 2610 ft. Elba Oil Co.'s No. 1, 27-26-13, rig. Cholane Syn.'s Jack 2, 10-25-15, td 3641 ft, co with oil. A. O. Lewis' Pecho 1, 34-30-10, sd 2750 ft. Little Cuyama Oil Co.'s No. 1, 3-10-26, dr shale 3053 ft. Temblor Oil Co.'s No. 1, 22-31-21, sd 3050 ft. Vanguard Oil Co.'s Clark 1, 26-27-14, dr shale and sand 976 ft.

SANTA BARBARA COUNTY—E. C. Arnold's Arnold-Apache 2, 8-8-33, td 6370 ft, co. Carpinteria Oil Co.'s No. 1, 34-4-2, rur. O. C. Fields' Santa Rita 1, 11-7-23, td 3358 ft, to deepen. C. B. Gauthier's No. 17-1A, 22-4-26, driving piles. Gaviota Oil Co.'s Hollister 1, 35-5-33, td 3207 ft, shut in. Standard's L. F. Land & Oil Co. 1, 27-9-33, td 425 ft, wocs 16-in on bottom. United Western Oil Co.'s No. 1, 16-7-30, sd 1032 ft.

VENTURA COUNTY—W. M. Lewis' Johnson 1, 15-1-22, sd 1038 ft, equipment removed. Oxnard Oil Co.'s Vanoni 1, 10-1-22, td 6302 ft, plug 6200 ft, sd. Southern Calif. Dr. Co.'s WPD 2, 26-2-21, dr hard sandstone 2420 ft. Vaca Oil Explor. Co.'s Lennox 1, 6-1-21, dr shale 3010 ft; Livingston 1, td 4270 ft, pumping 15 bbls. Richfield Oil Corp.'s McFarland 1, 13-2-21, td 5297 ft, wocs 11¾-in at 4986 ft; Texas Co.'s Edwards 1, 13-3-21, rig.

WILMINGTON—Alford Dev. Co.'s Class. Yards 3, 22-4-13, dr shale 3990 ft, no showings.

NEWHALL—Barnsdall's Rancho S. F. 2, 26-4-17, td 5090 ft, redr at 4720 ft. West Coast Dev. Corp.'s Newhall Land 1, 27-4-16, bldg. rig.

MONTEBELLO—British Amercan's Pico 1, 12-2-12, sd 3990 ft.

PICO CANYON—Downey Oil Corp.'s No. 1, 36-4-17, dr hard sand 2453 ft.

PALOS VERDES—Hunter-Devlin & Associates' No. 1, 17-4-13, td 5502 ft, plug 5452 ft, wocs 7-in at 5182 ft.

WALNUT—Julian & Criswell's Langstaff 1, 5-2-9, td 2855 ft, dr pipe stuck.

PALOS VERDES HILLS—McClaren Bros.' No. 1, 27-4-14, td 3970 ft, redr to 1875 ft, sd to drop from report. Rolling Hills Pet. Co.'s P. V. 1, 27-4-14, dr hard shale 1100 ft.

TICK CANYON—Mint Canyon Pet. Co.'s Jennings 1, 35-5-14, dr grit and limey shale 506 ft.

MONTEREY PARK — Monte Cristo Pet. Co.'s Garvey 1, 27-1-12, ready to spud.

CASTIAC — Royal Lands Corp.'s Ramona Hills 1, 3-4-17, dr shale 115 ft.

GARDENA—Texas Co.'s Gardena Com. 5-1, 30-3-13, dr shale 2530 ft.

ORANGE COUNTY—Shell's Harbeson 1, 9-4-10, dr shale 7894 ft; Olinda Land Co. F, 16-3-9, lcn; Olinda Land Co. E, 16-3-9, lcn.

FLORIDA

LAKE COUNTY—Oil Dev. Co. of Fla.'s Gulf Expl. Co. 2, se se 17-24s-25e, elev 120 ft, arr set pckr and retest at 2600 ft, old td 6126 ft.

LEVY COUNTY—Fla. Oil Discovery Co.'s Sholtz 2, sw sw ne 9-15s-13e, dr 1570 ft.

NASSAU COUNTY—St. Mary's River Oil Corp.'s Hilliard Turpentine Co. 1, nw ne se 19-4n-24e, elev 110 ft, dr 3802 ft.

SUWANEE COUNTY—Wm. G. Blanchard's Lucy Cotton 1, se ne 35-3s-11e, elev 70 ft, resetting 16-in csg at 190 ft to eliminate caving hole.

ILLINOIS

BOND COUNTY—J. M. Huber Corp.'s Kunz, se nw nw 11-6n-5w, dr 3040 ft. Universal Wells Serv. Co. et al's Molder 1, nw nw nw 24-6n-4w, dr 1130 ft. A. T. Whitehead et al's Pollan 1, nw se sw 26-6n-2w, sd 2633 ft.

CHRISTIAN COUNTY — Parshall-Graham Co.'s Yockey 1, sw sw ne 36-15n-2w, taking fill-up test. Rogers Bros. et al's Johnson 1, ne se se 27-12n-2w, sd 1349 ft. Siegel & Schlosberg's Glass 3, nw nw sw 29-12n-2w, sd 1052 ft.

CLAY COUNTY—Southern Ill. Pet. Co.'s Knodacker 1, nw se sw 23-3n-7e, sd 2316 ft. C. H. & C. Oil Co. et al's Duff 1, cs/2 nw ne 7-3n-8e, bailing 3075 ft. J. E. Milburn's Striegle 1, se nw ne 19-3n-8e, der. Gulf Ref. Co.'s Laughton 1, nw ne nw 29-4n-8e, td 3234 ft; co. Bonnie Oil Co.'s Schnautz 1, se sw ne 31-4n-8e, dr 1975 ft. Vermillion Oil Co.'s Duff 1, cs/2 ne se ne 19-3n-8e, dr plug & swb'd mud & SW. SSO.

CLINTON COUNTY — Adams O&G Co.'s

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abondoned.*
bbls—*barrels.*
br—*building rig.*
b.s.—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg—*fishing.*
ft—*feet.*
hfw—*hole full of water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oih—*oil in hole.*
owdd—*old well drilling deeper*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
so&g—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

Schmidt 1, se se ne 2-1n-1w, td 1384 ft, sd for fill-up test. P. F. Dalton's Clifton 1, ne sw sw 15-1n-4w, sd 483 ft. W. C. McBride's Schultte 1, sw sw ne 3-2n-4w, dr 703 ft. Holly & Willis' Muex 1, ce/2 ne ne 18-3n-2w, dr 755 ft. P. J. Campbell's Allen 1, sw sw nw 28-3n-2w, mach. Ellzy et al's Williams 1, sw nw sw 1-3n-1w, de.r McClanahan Oil Co.'s Hester 1, cn/2 sw 26-3n-1w, dr 1600 ft. Schlosberg & Seigel's Monken 1, ne sw sw 4-2n-1w, dr 925 ft.

COLES COUNTY—W. J. Miller et al's Tomberlin 1, se se se 21-11n-10e, spd.

CUMBERLAND COUNTY—Jolly-Hill-Stipes et al's Jenkins 1, se ne ne 30-10n-9e, dr 1845 ft.

EFFINGHAM COUNTY—Kingwood & Carter Oil Co.'s Bartel 1, ce/2 ne nw 26-6n-5e, td 4102 ft; testing. Carter Oil Co.'s Pruemer 1, cw/2 sw ne 11-8n-7e, sd 2565 ft.

FAYETTE COUNTY — Benedum & Trees' (was Hurricane Oil Co.'s) Moore-Clayton Van Zandt 1, sw sw sw 24-6n-1w, cor 1587 ft. Hausman et al's Northwestern Life Ins. Co. 1, csw ne 22-6n-1e, dr 101 ft. Carter Oil Co.'s Miller 1, cw/2 nw nw 12-8n-3e, sd for pump. Schroeder et al's Lilly 1, se sw se 16-8n-3e, sd 1275 ft. Carter Oil Co.'s Clow 1, ce/2 sw ne 15-8n-3e, C&P; der.

FRANKLIN COUNTY—Robert Markham's Whittington 1, ce/2, sw se 18-5s-3e, lcn. Washburn Pet. Corp.'s Neil 1, ce/2 se se 6-5s-4e, sd 295 ft.

GREENE COUNTY—M. V. Yeager's Robinson 1, se sw nw 17-10n-11w, sd 175 ft. Natl. Consumers Oil Co.'s Jackson 1, nw ne nw 21-11n-12w, bailing to shoot.

HAMILTON COUNTY—J. Garfield Buell's Leach 1, cse se sw 22-3s-7e, td 3499 ft. D. & A. Carpenter et al's Clark 1-A, nw nw sw 32-3s-5e, dr 530 ft. The Texas Co.'s Silverman 1, ce/2 sw nw 16-3s-7e, der.

JASPER COUNTY—C. R. Overmeyer's Atkins 1, nw nw ne 3-6n-9e, set 10-in csg 250 ft. LeWright et al's Wilkins 1, sw sw sw 36-6n-9e, C. & P. Denver P&R Co.'s Ochs 1, nw nw ne 33-6n-14w, rig. Hoffman et al's King 1, sw nw nw 20-8n-10e, rur.

JEFFERSON COUNTY—Siegel & Schlosberg's Schneider 1, ne ne se 15-1s-1e, sd 1152 ft. Carter Oil Co.'s Tate 1, cw/2 nw ne 10-1s-2e, dr 3770 ft. Sturbois & Tomberlin's Osborne 1, cnw se 8-2s-2e, ru mach. Nollem & Benoist's Kelley 1, ne nw ne 25-4s-2e, dr 1075 ft. E. J. Dees & W. J. Carter's Hamilton 1, ne sw nw 20-4s-3e, td 2911 ft; testing.

JERSEY COUNTY—Boyd et al's Wyman 1, nw se nw 32-7n-12w, sd 930 ft.

MADISON COUNTY—Strauss et al's Robeson 1, nw se ne 16-3n-10w, dr 2914 ft.

MARION COUNTY — Dee & Nordan's Roddy 1, sw se sw 20-2n-3e, sd 2122 ft. Williamson-Taylor et al's Daniels 1, se/4 18-2n-4e, cor 2630 ft. T. M. Conrey's Thalman Estate 1, ne nw nw se 9-3n-1e, td 1728 ft, D. & A. Shell Pet. Corp.'s Lutz 1, sw ne ne 18-3n-1e, td 1706 ft, D. & A. Marion Oil Co.'s Wilson 1, ne ne se 18-3n-3e, sd 1109 ft. Alexander et al's Allison 2, nw sw sw 33-4n-1e, td 1477 ft, D. & A. Coleman-Blosser's Britt 1, nw nw nw 36-4n-1e, dr 920 ft. Mahutske Oil Co.'s Nichols 1, se sw se 12-4n-4e, ur 6-in csg 2685 ft. Alexander et al's Pope 1, ne ne ne 26-3n-1w, dr 1600 ft.

MASSAC COUNTY—Kahle et al's Harvick 1, sw sw sw 23-14s-3e, cor 2840 ft.

MONTGOMERY COUNTY—Schlosberg & Siegel's Nieman 1, cse sw 29-8n-5w, dr 589 ft.

POPE COUNTY—C. C. Whitlock et al's Anthis 1, nw nw ne 12-11s-5e, sd 1352 ft.

RANDOLPH COUNTY—W. A. Delaney & J. E. Mabee's Wilson 1, ce/2 se ne 3-4s-5w, dr 2495 ft.

RICHLAND COUNTY — Wiser Oil Co.'s Travette & Mattie Land Bank 1, cn/2 ne se 8-2n-10e, dr 2610 ft. Hollingsworth O&G Co.'s Waggoner 1, ne nw nw 5-3n-14w, der. Mammoth P. & R. Co.'s McCaulley 1, sw se nw 28-3n-9e, td 3146 ft, D. & A. Sam Raitman's Richey 1, cne nw 12-4n-14w, Lcn. Bill Loving et al's Blue Ridge Church 1, ne ne se 26-4n-9e, der. Ray & Alford's Franklin 1, nw nw ne 34-5n-10e, rig. Kingwood & McMahon's Negley Bros. 1, nw nw se 31-5n-9e, rur. Frost's Farris 1, sw sw se 18-3n-10e, ru. Geo. Parker et al's Berry 1, se sw ne 22-2n-14w, spd.

SHELBY COUNTY—J. A. English et al's McClory 1, se se ne 14-10n-6e, cor 2370 ft.

WABASH COUNTY—Martin et al's W. R. Wood 1, ne se nw 31-1n-12w, spd & sd.

WARDS COUNTY—Dr. W. F. Schmidt's Strenne 1, ne nw ne 5-1n-14w, rust. Leach Bros.'s Lee 1, sw ne se 11-1s-10e, re-run csg.

WASHINGTON COUNTY—Bittmer et al's Jesse 1, cse ne 16-3s-2w, mi cable tools.

WAYNE COUNTY — Benedum & Trees' Craig 1, se se sw 28-2n-7e, td 3218 ft.; testing. R. R. Washburn Pet. Co.'s Acola 1, nw ne nw 31-2s-6e, td 3042 ft, D. & A. Benedum & Trees' Knapp 1 "A," ne ne ne 12-1n-6e, td 3314 ft, D. & A. Benedum & Trees' Young 1, ne ne nw 7-1n-7e, Lcn Abd.

WHITE COUNTY—Davis & Harrell's Poorman 1, ne nw nw 5-4s-8e, dr 3185 ft.

WILLIAMSON COUNTY—Edward C. Snyder's Flemming 1, cse ne 9-10s-2e, rig corners.

KANSAS

BARBER COUNTY—Olson & Skelly's Elsea 1, sw se nw 27-32s-14w, td 5248 ft, will pb to Miss. Kansas Oil Corp.'s Mease 1, ne se se 27-30s-11w, dr 4050 ft. Helmerich & Payne's Winter 1, nw nw sw 16-32s-10w, rot rig.

BARTON COUNTY—C. L. Price et al's Hammeke 1, ne ne sw 12-18s-12w, bailing. Arch Merriam et al's Norris 1, ne ne nw 33-17s-11w, dr 3240 ft. Martin & Foraker et al's Dick 1, ne sw sw 31-19s-11w, mim. Shell's Ehrlich 1, sw sw sw 1-16s-14w, dd to 3296 ft, 2800 ft oih. Stanolind's Hagen "A" 1, se se se 21-20s-11w, dr out cement. Elmer Ash et al's Frees 1, nw nw nw 34-16s-11w, rig. Shell's Eckhart 1, se se sw 13-16s-14w, rur. Lauck & Moncrief & Vernon O&G Co.'s Rodenburg 1, ne se sw 6-17s-12w, mi rot.

BUTLER COUNTY—Reeves & Kinnan's Heim 1, sw sw sw 5-29s-3w, rig. Steinbuchel et al's Fox 1, nw se ne 25-26s-3e, ru mach.

CHASE COUNTY—T. D. Duffy's Leedy 1, ne nw nw 26-22s-9e, rig.

CHAUTAUQUA COUNTY—C. L. Price et al's Garrett 1, nw sw nw 26-32s-11e, co 1545 ft. W. G. Buffington's Fisher 1, cwl sw nw 10-34s-9e, sd 1877 ft. I. W. Siegle's Temple 1, sw sw sw 31-32s-12e, ru. Sooby et al's Davis 1, sw ne nw 29-33s-10e, ru mach. Ingot Oil Co.'s McKee 1, sw se sw 21-32s-12e, acidizing.

COWLEY COUNTY—Pryor & Lockhart's Brown 1, ne se se 34-33s-3e, co 3403 ft. Earl Wakefield's Whitson 1, sw ne se 8-32s-4e, dr 1115 ft. Arthur Brewer Co.'s Shephard 1, ne ne sw 20-32s-4e, dr 2880 ft. Murta-Wilson et al's Stuber 1, se ne ne 27-30s-5e, dr 1885 ft. Dickey Oil Co.'s Kansas G&E Co. 1, ne ne ne 22-34s-3e, dr 540 ft.

ELLIS COUNTY—P. G. Reynolds et al's Karlin 1, nw nw nw 13-12s-18w, set 6-in csg 3434 ft, co. Colonial Oil Co. & Bernheimer's Allbert 1, sw sw ne 13-12s-18w, dr 3257 ft. Glimac Oil Co. et al's K. C. Life Ins. Co. 1, se sw nw 5-11s-18w, rig. Colonial Oil Co.'s Hadley 1, se ne se 5-11s-18w, lcn. Bradley Oil Co.'s Jensen 1, nw nw se 36-11s-19w, dr 2735 ft. C. L. Carlock's (was L. A. Hall's) Heyle 1, se se nw 14-13s-16w, ru. Continental's Baumrucker 1, ne ne sw 25-14s-16w, dr 815 ft. Helmerich & Payne et al's Stebbins 1, nw nw se 7-13s-20w, surf pipe. J. J. Muth's Penney 1, cnl ne se 29-14s-18w, owdd, dr 350 ft.

ELLSWORTH COUNTY—Hinkle et al's Andrea 1, ne ne se 17-17s-10w, dr 880 ft. Ralph Wixon et al's Peterman 1, sw sw sw 28-17s-10w, rig.

GRAY COUNTY—P. G. Reynolds' Watkins 1, csw 32-28s-28w, rig.

GREENWOOD COUNTY — Whittaker & Johnson's Cannon 1, cel se nw 8-26s-13e, co 1185 ft.

HARVEY COUNTY—Nat'l Ref. Co.'s Brown Bros. 1, nw se ne 22-23s-2w, rig.

JEWELL COUNTY—Hollingsworth Bros.' Wolfe 1, nw sw se 14-4s-8w, ru.

MARION COUNTY—Tom Palmer et al's Matz 1, sw sw se 8-19s-1e, dr 2285 ft.

McPHERSON COUNTY—Dole-Park Dev. Co.'s Doles 1, ne nw ne 12-19s-1w, woc. Clyde Pulse et al's Boesker 1, se se nw 29-20s-1w, rig. Boyle & Grossman's Diener 1, se se ne 35-19s-1w, ur 8-in csg 2585 ft. Carter's Hoglund 1, cw½ sw nw 8-17s-3w, dr 818 ft. Phillips' Galle 1, nw nw ne 11-21s-2w, dr 1554 ft. Thayer Drlg. Co. & Brouk's Soderstrom 1, se se nw 21-17s-3w, lcn. Archer & Crane's Templin 1, nw sw se 32-17s-3w, cel.

NESS COUNTY — Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, fsg 3265 ft. Continental's Olson 1, sw nw nw 5-18s-25w, set 10-in csg 1038 ft, woc.

PAWNEE COUNTY—Stanolind & Amerada's Jantz 1, sw sw sw 25-20s-16w, dr out cem. Phillips' F. A. Johnson 1, cne sw 8-20s-19w, dr 3464 ft.

PRATT COUNTY—Skelly et al's Adams 1, se nw ne 2-28s-11w, set whpstk 4223-53 ft, woc. Pem Drlg. Co. et al's Holland 1, sw nw se 6-26s-12w, dr 4100 ft. Helmerich & Payne et al's Hoeme 1, se se ne 20-26s-12w, lcn.

RENO COUNTY—Sam Schneider et al's Kroecker 1, ne ne ne 12-22s-5w, dr 3660 ft. Albert Austin's Schwiethold 1, sw sw ne 17-23s-10w, dr 3315 ft. McCole et al's Mathews 1, sw nw nw 15-24s-10w, cel.

RICE COUNTY—Fred Phillips et al's Oden 1, se ne nw 22-20s-7w, dr 3183 ft. Joe Aylward's Weihe 1, sw sw ne 23-18s-9w, br.

ROOKS COUNTY—Graham et al's Fike 1, sw sw sw 9-9s-17w, fsg. Texas Co.'s McCarroll 1, cwl nw 29-10s-17w, dr 4050 ft. Colonial et al's Tucker 1, sw se nw 23-10s-17w, rur. Producers Oil Co.'s Tucker 1, sw se nw 23-10s-17w, dr 2319 ft. Ross Oil et al's Hancock 1, ne ne nw 5-10s-17w, set surf pipe. Witt & Sheridan et al's Morrison 1, nw se sw 29-10s-17w, mim.

RUSH COUNTY — Wakefield & Brouk's Kerbs 1, nw nw se 11-17s-16w, fsg 2445 ft.

RUSSELL COUNTY — Murfin & Vernon O&G Co.'s Pearson 1, ne ne ne 31-15s-15w, ur 8-in csg 2650 ft. C. L. Price's Sebesta 1, ne ne ne 36-15s-11w, ur 5-in csg. Jones & Shelbourne's Short 1, ne ne ne 12-15s-12w, fsg 1700 ft. Phil-Han & Hinkle's Reinhardt 1, se se sw 19-14s-14w, dr 250 ft.

SEDGWICK COUNTY—Nat'l Ref Co.'s Fee 1, se ne se 36-27s-2e, pb 3098 ft. I. W. Murfin et al's Martin 1, se se nw 18-28s-1e, swb 45 bbls oil, 24 hrs. W. C. Talbott et al's Downs Estate 1, se se nw 32-28s-2e, testing. Frank Hudson et al's Fulton 1, ne ne se 35-28s-1e, fsg 1550 ft. Continental's Oehlert 1, nw nw se 7-27s-4e, abnd 4147 ft. Steinbuchel's Shaffer 1, sw sw nw 18-25s-1e, dr 3030 ft.

STAFFORD COUNTY—Hinkle et al's Moses 1, nw nw sw 9-22s-13w, dr 2872 ft. Fred Rust et al's Drach 1, ne ne sw 12-22s-13w, pot 945 bbls oil, comp. Stanolind's Teichman 1, se se se

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13-22s-13w, pb 3733 ft. Tom Palmer's Fair 1, se ne sw 10-22s-11w, dr 1700 ft. Torry & Feaster et al's Heggy 1. ne ne sw 26-23s-11w, rur. Stanolind's Wadsack 1, sw sw ne 4-25s-11w, set 13-in csg 249 ft. Torry & Feaster et al's Negley 1, sw sw ne 23-22s-12w, rur. Lindsay & Bailliere et al's Tiepermann 1, sw sw nw 31-22s-12w, dr 1545 ft.

SUMNER COUNTY — W. M. McKnab's Blair 1, sw sw sw 7-30s-1e, td 3869 ft, testing. R. J. Wixon's Newton 1, se se se 31-30s-2e, dr 2975 ft. Saco Oil & Cameron et al's Phipps 1, sw se ne 24-30s-1w, cel. Roth & Faurot's Fry 1, nw sw sw 8-31s-3e, dr 715 ft. Hugh T. Jones et al's Stunkel 1, se se sw 2-30s-1w, rig.

TREGO COUNTY—Thurman Hill et al's Lawson 1, sw sw nw 7-14s-22w, abnd 4398 ft.

NORTH LOUISIANA

BIENVILLE PARISH—DeSoto O&G Co.'s Wm. Ashley 2, c sw se 15-16n-10w, rur. Gulf Oil Corp.'s Goodpine Oil Co. 1, se sw 25-14n-8w, elev 157 ft, massive anhydrite 5303-5420 ft, coring 5804 ft shale. Hunt & Seaboard's Federal Land Bank 1, c s½ 10-16n-6w, elev 296 ft, 7-in csg 6867 ft, dr 7408 ft.

BOSSIER PARISH — Union Prod. Co.'s Kerr 1, c se 24-17n-12w, woc surf csg (lower Marine test).

CADDO PARISH—W. J. Hunter & Homer Hurley's N. B. Stoer 2, c se sw 10-15n-15w, rur. A. O. Olsen et al's R. T. Sharp 1, c w½ nw 15-18n-16w, elev 238 ft, sd 5624 ft. Prairie River Synd 's Hutchinson 1, sw nw 15-15n-12w, elev 153 ft, top lower Marine 8380 ft, top Bodcaw sand 8775 ft, tested sg 8987-9110 ft, arr deepen, td 9141 ft. A. D. Robinson et al's Dickson 1. 22-20n-14w, dr 1490 ft chalk.

CATAHOULA PARISH—G. E. Foster et al's W. S Peck 1, c s½ 39-10n-8e, rur.

CLAIBORNE PARISH—J. B. Bond's Burgess 1, ne se ne 3-20-5w, elev 276 ft, wosr pb, td 5325 ft, old td 5800 ft. W. L. McClanahan's J. T. Lewis 1, sw se 25-20n-7w, elev 400 ft, dr 4760 ft, anhydrite and shale. Union Prod. Co. et al's Brownfield 2, c se nw 5-19n-5w, elev 235 ft, dr 7690 ft. Triangle Drlg. Co. et al's Hawks 1, 1-19n-6w, dr 4900 ft.

DE SOTO PARISH—Clear Lake Oil Co.'s J. A. Woolums 1, nw nw 29-12n-12w, cored sand, so 2674 ft, wo 6⅝ in csg, td 2694 ft. Wright, Harris et al's (Kingston Oil Co.), C. B. Scott 1, ne ne 32-14n-13w, co caving hole, td 2778 ft. La. Seaboard O. R. Co.'s Lawrence 1, sw ne 36-12n-14w, dk.

LINCOLN PARISH — Gigantic Oil Co.'s R. L. Sanderson 1, nw se nw 30-18n-1w, sd 179 ft. E. T. Oakes, H. D. Easton et al's N. L. Griggs 1, c sw 36-18n-1w, elev 199 ft, top anhydrite stringer 4253 ft, massive anhydrite 4493-4713 ft, coring 4921 ft.

MOREHOUSE PARISH—H. J. Furlong, Jr., et al's E. L. Clark 1, 10-20n-7e, owdd, td 3740 ft.

RED RIVER PARISH—Ark. Fuel Oil Co.'s Franklin Realty Co. 1, c ne nw 20-11n-9w, elev 135 ft, top chalk 1350 ft, dr 3515 ft.

SABINE PARISH—Phillips & Fox's Cook Land Co. 1, sw se nw 1-9n-12w, elev 295 ft, cored sandy lime, so 3320 ft, coring 3390 ft, sandy lime strks shale. Larry Romine's La. Long Leaf Lbr. Co. 1, c sw sw 7-5n-12w, elev 243 ft, Annona chalk 3598-3973 ft, Austin chalk 4820-4890 ft, top Georgetown lime 5010 ft, fsh, td 5290 ft, Georgetown lime. Sutton Oil Co.'s Sabine Lbr. Co. 1, se nw ne 23-7n-14w, mim (10,000 ft test).

TENSAS PARISH—H. M. Jones' Chicago Mill & Lbr. Co. 2, c ne sw 31-12n-10e, rur. Desha Lbr. Co 1, c ne se 17-13n-11e, dk.

UNION PARISH — Joe Modisett et al's Frost Lbr. Co. 1, ne sw 14-21n-1e, elev 188 ft, top Travis Peak 4050 ft, 9⅝ in csg 4358 ft, dr 6012 ft shale.

WEBSTER PARISH—Magnolia Pet. Co.'s Sexton 1, c sw ne 32-23n-9w, lcn (9000 ft test).

SOUTH LOUISIANA

ACADIA PARISH—W. C. Daniel's Setting 1, Trilby prospect, 17-9s-1w, no report. Gulf's Broussard 1, Midland area,49-10s-2w, dr shale 8673 ft. Humble's Sarver 1, South Crowley prospect, 35-10s-1e, dr shale 10,179 ft. Magnolia's Duson 1, Iota prospect, 14-8s-2w, abn 8753 ft.

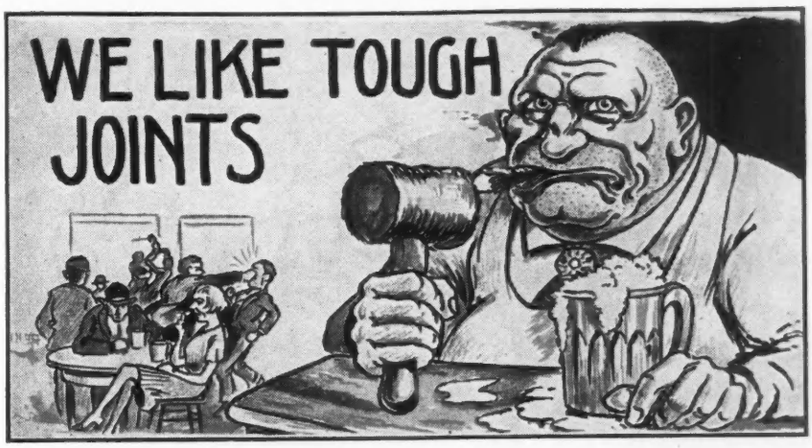
CALCASIEU PARISH—D. & D. Oil Co.'s Lutcher Moore 2, nw of Starks, 1-8s-13w, dr shale 9614 ft. Republic Prod. Co.'s Sabine Tram 1,w of Starks, 25-8s-14w, fsh 9670 ft. Union Sulphur's American Oil & Sulphur Co. 1, s of Lake Charles, 16-10ns-10w, dr shale 3072 ft.

CAMERON PARISH — Humble's Miami Corp. 1, Catfish Lake area, 8-14s-5w, dr shale 9351 ft. Shell's K. Bel Hanszen 1, Chalkley area, 22-12s-6w, canal. Superior's State 1, in Gulf of Mexico, off Section 4-15s-8w, dr shale 6988 ft.

EAST BATON ROUGE PARISH—Cavalier Oil Co.'s Elliott 1, Hope Villa area, 3-8s-2e, losing returns 7250 ft.

IBERIA PARISH—Texas Co.'s State 2-B, in Vermilion Bay, 20-15s-6e, fsh 8971 ft.

JEFFERSON DAVIS PARISH—Continent-



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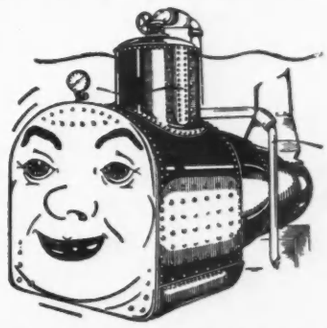

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of the

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By

DAISY WINIFRED HEATH

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al's Fay 1, se of South Roanoke, 31-10s-3w, dr shale 8930 ft. Humble's Stegall 1, nw of Welsh, 20-9s-5w, dr shale 7050 ft. Union Sulphur's Calcasieu National Bank 1, s of Woodlawn, 12-9s-8w, dr shale 8469 ft.

LAFOURCHE PARISH—Amerada's South Coast Corp. 1, Raceland area, 34-15s-19e, dr shale 9809 ft. Gulf's State PP 3, Timbalier Bay, 36-23s-21e, working with geophysics at 8727 ft. William Helis' City of New Orleans 2, Marchand area, 19-23s-23e, abn 9660 ft, salt.

PLAQUEMINES PARISH — Gulf's State OO 3, Quarantine Bay, 17-19s-19e, comp. 845 bbls daily 8177 ft.

ST. BERNARD PARISH—Gulf's State RR 2, Lake Borgne, 38-14s-15e, dr shale 4430 ft.

ST. MARTIN PARISH—Shell's A. Frederick 1, Arnaudville area, 38-8s-5e, dr shale 3218 ft. Shell-Tide Water's Unit 1, Lake Verret area, 11-14s-12e, driving piling. Texas Co.'s St. Martin Land 10, Henderson prospect, 15-8s-7e, dr shale 8790 ft; same operator's State 4, Lake Mongouloi prospect, 14-10s-9e, driving piling.

ST. MARY PARISH—Shell's Barbour 1, Glenwild prospect, 21-15s-12e, dr shale 8509 ft. Texas Co.'s State 1, Bateman Bay prospect, 21-16s-12e, running five-in csg 11,000 ft.

TERREBONNE PARISH — Delarge Oil Co.'s Buckley 1, Dulac area, 77-19s-17e, canal.

MICHIGAN

ler 1, 34-4n-12w, sd 735 ft. S. B. Hood's Wright 1, 9-3n-13w, dr 890 ft.

ARENAC COUNTY—R. L. Hill's Reinhart 1, 25-19n-5e, mim. D. F. Jone's Sibley 1, 33-20n-7e, dr 1830 ft.

BAY COUNTY—Fortney Oil Co.'s Smart 1, 7-16n-5e, dr 2260 ft. Charles Weller's Dewyer 1, 20-16n-3e, dr 2800 ft. Gulf Ref. Co.'s Marston 1, se sw ne 1-14n-4e, spudding. Stork Oil Co.'s Century 1, 9-17n-3e, dr 2840 ft.

CLARE COUNTY—Sun Oil Co.'s Weldon 1, 14-19n-3w, dr 450 ft. Wittmer Oil Co.'s Palomar 1, 2-18n-5w, dr 2800 ft. McClanahan Oil Co.'s Mortenson 1, 9-18n-5w, sd 1665 ft. James McKay's Fee 12, 24-18n-5w, dr 590 ft.

GLADWIN COUNTY—Durham — Jone's LaFurgey 1, 20-17n-2e, Dundee 3434 ft, so 3510 ft, acidizing 3546 ft, 2000 ft oil natural. Chapman Oil Co.'s State 1, 33-17n-2e, Dundee 3467 ft, fsg 3573 ft. McClanahan Oil Co.'s Connoly 1, 35-17n-2e, dr 1500 ft. Dapar Oil Co.'s Villeneuve 1, 11-20n-2e, fsg 4045 ft.

GRATIOT COUNTY—L. D. Hendershot's Klamp 1, 1-17n-14e, sd 2029 ft. C. W. Teater's Martin 1, 15-15n-11e, dr 1900 ft.

ISABELLA COUNTY—J. V. Wicklund's Lawen 1, 24-15n-5w, rig. Cryden & Rowmor's Smith 1, 35-15n-5w, dr 900 ft. J. Golden Zabel's Kennedy 1, 25-14n-4w, sd 1483 ft.

MECOSTA COUNTY—Sun Oil Co.'s Robert 1, 29-16n-7w, driving 10 in 296 ft. Frank Heber's Weeks 1, 32-15n-7w, dr 490 ft.

MIDLAND COUNTY—Sun Oil Co.'s State B-1, 5-16n-1w, re-cmt 5-in 3801 ft, 400 ft oil in hole, Dundee 3803, td 3955 ft. Daily Crude Oil Co.'s State 1, 29-15n-2e, cmt 6-in 1370 ft. C. W. Teater's Hitsman 1, nw nw sw, 31-13n-1w, deepening abandoned test, dr 3150 ft.

MONROE COUNTY — Milburn Violette's Russell 1, 5-6s-7e, dr 2360 ft. R. D. Olmstead's Frink 1, 25-5s-6e, sd 900 ft.

MONTCALM COUNTY—H. L. Gentry's Christensen 1, 29-11n-8w, sd 1255 ft. Hirzel-Leland's Hansen 1, 31-10n-7w, sd 850 ft.

OTTAWA COUNTY—Albert Maring's Flagel 1, 3-7n-14w, sd 375 ft. Lentz & Miller's Kok 1, 29-5n-14w, lcn. Morris Sutherland's Brandt 1, 36-5n-14w, dr 1300 ft.

ROSCOMMON COUNTY — Franklin Pet. Dev.'s St. Helen 1, 26-23n-2w, dr 3000 ft. Maynard Smith's Eggleston 1, 32-21n-2w, dr 1400 ft.

TUSCOLA COUNTY—Frank Norton's Vorhees 1, 8-12n-11e, sd 3099 ft. Jenicke & Brehm's Boyce 1, 24-14n-7e, testing so 2856 ft (Dundee 2597).

MISCELLANEOUS COUNTIES: Cass—Wayne Oil & Gas Co.'s Gebhard 1, 34-5s-15w, dr 1240 ft. Crawford—Dome Oil Co.'s Lindgren 1, 33-25n-3w, dr 610 ft. Mackinac—Charles VanKuren's Hiawatha 2, 27-44n-9w, dr 200 ft. Shiawassee — —T. K. Buzard's McCullough 1, 12-6n-3e, dr 750 ft.

MISSISSIPPI

BOLIVAR COUNTY—White & Jones' Ballou 1, ne ne 18-24n-7w, sd 1681 ft.

CALHOUN COUNTY—Ed Spencer's J. C. Conner 1, se ne 12-24n-8e, lcn. B. G. Dowell's H. D. Hughes 1, 18-23n-9e, sd 1600 ft.

CLAIBORNE COUNTY—Claiborne County Dev. Co.'s Ruth Hayden 1, s½ se 55-11n-2e, 10-in csg 200 ft, dr 625 ft.

GEORGE COUNTY—Cleve Love et al's J. J. Newman Lbr. Co. 2, c sw 9-1s-8w, spd, arr set 10-in csg 1500 ft.

HINDS COUNTY—Black River Oil Co.'s Federal Land Bank 1, ne ne 11-15n-5w, rur. Cleve Love et al's S. F. Johnson 1, ne se 29-6n-1w, rur. Southern Nat. Gas Co.'s Angelo Williams 1, ne nw 35-6n-4w, elev 183 ft, 22-in csg 89 ft, 13⅜ in csg 416 ft, top Wilcox 2631 ft, top dome cap rock 2730 ft, tested 900 ft. sulphur water, sg 2881 ft, dr 2910 lime rock cap.

KEMPER COUNTY—R. A. Keaton et al's Buckwalter Lbr. Co. 1, nec 6-10n-14e, dk.

LAMAR COUNTY—Sun Oil Co. et al's Mrs. Kate Talley 4, se nw 33-4n-15w, dr 6205 ft shale. South Miss. Oil Co.'s Morris 1, sec 4-2n-14w, spd and sd.

PERRY COUNTY—Phillips Pet. Co.'s J. J. Newman Lbr. Co. 1, se se sw 21-8-10w, 20-in csg 180 ft, woc 10¾ in csg 1532 ft.

SIMPSON COUNTY—Goodwill O&G Co.'s Berry 1, 33-2n-4e, woc 10-in csg 60 ft.

WILKINSON COUNTY—A. B. Taylor et al's Foster Creek Lbr. Co. 2, nwc 32-4n-2w, rur.

YALABOUSHA COUNTY—Acme Holding Co.'s S. D. Boyle 1, nw nw 33-25n-7e, elev 285 ft, dr 310 ft. Skuna Dev. Co.'s Mrs. T. A. Turner 1, se sw ne 25-25n-6e, sd 925 ft.

NEBRASKA

JEFFERSON COUNTY—L. R. Page et al's Bonham 1, cse se 31-1n-1e, dr. 2810 ft.

RICHARDSON COUNTY—Arab Pet. Corp. et al's Ogle 1, se se se 9-1n-14e, td 3423 ft; pb to Viola lime 3019 ft.

OKLAHOMA

ADAIR COUNTY—B. L. Maddox' Penn Mutual Life Ins. Co. 1, cs½ ne nw 5-16n-24e, dr 260 ft.

ATOKA COUNTY—C. M. Sheldon & Gardner Pet. Co.'s Lee 1, ne nw sw 2-4s-10e, dr 1535 ft. Hagey et al's Becker 1, cne¼ 4-1n-13e, td 3010 ft, to pb. Hagey et al's Peck 1, cne¼ 6-1n-13e, woc 2766 ft.

BRYAN COUNTY — Southern Oil Co.'s Henry 1, cnw ne 10-8s-7e, dk.

CADDO COUNTY—I. T. I. O. Co.'s Dome-Bo 1, cne se 29-6n-10w, reaming to test.

CARTER COUNTY—Lloyd Noble's Revelle 1, sw sw se 21-3s-2w, dr 3060 ft.

CLEVELAND COUNTY—Harper & Turner's Pollock 1, cw½ nw nw 13-9n-2w, fsg 6850 ft.

CHOCTAW COUNTY—V. K. Chapman & Lowe's Hallum 1, nw nw ne 4-7s-20e, co 240 ft. J. A. True's Boby 1, nw se nw nw 17-7s-19e, rur.

COAL COUNTY—Phillips' Beck 1, se sw sw 6-1n-9e, dr 5343 ft. Carter et al's Claytor 1, cw½ ne sw 27-2n-9e, dr 6585 ft.

COMANCHE COUNTY — J. W. Wolfe's Costinus 1, sw sw se 30-4n-11w, spd.

COTTON COUNTY—Bowers & Wise, Pendergraft 1, nw se sw 4-4s-12w, sd for rot tools. J. W. Amyx' Ash 1, se se se 7-4s-10w, abd 1262 ft.

CREEK COUNTY—M. W. Mosier et al's

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Holcomb 1, se sw ne 19-18n-8e, td 3018 ft, to recem csg.

GARVIN COUNTY — B. C. D. Edwards' Clark 1, ne ne ne 16-3n-3e, td 2676 ft, rec 2132 ft drill pipe.

GRADY COUNTY—Gulf's Thomas 1, sw nw nw 14-4n-5w, dr 9129 ft. Doyle Pet. Co.'s Huffine 1, nw nw se 30-5n-8w, dk.

GRANT COUNTY—Magnolia's Reynolds 1, ne ne se 19-25n-5w, dr 3695 ft.

HUGHES COUNTY—Phillips' Becker 1, ne nw sw 8-5n-10e, to dr to Wx sand. Pure's Rogers 1, se se ne 18-8n-12e, dr 4829 ft.

JOHNSTON COUNTY—W. T. Shelton's Chapman 1, cnw nw 26-4s-6e, fsg bit 2510 ft.

KAY COUNTY—Fortuna Oil Co.'s Harris 1, sw sw ne 14-25n-1e, sd 282 ft, E. J. Shaffer et al's McKee 1, ne ne nw 20-28n-1w, dr 2425 ft. E. W. Jones et al's Dorse 1, se sw nw 25-26n-1w, dr 2800 ft. F. S. Freeland et al's Watson 1-A, ne nw nw 28-28n-1w, dgng cel and rog. E. J. Shaffer et al's Rudolph 1, ne ne sw 27-29n-1w, cel.

LINCOLN COUNTY—C. L. Carlock et al's Young 1, cn½ nw nw 23-15n-5e, recem csg.

LOGAN COUNTY—Anthony & Marshall's Fruin-Eckman 1, se se sw 4-16n-1e, so&g, sd 5181 ft. Texas Co.'s Roper 1, cw½ sw se 22-15n-1e, td 5458 ft, prep to test.

LOVE COUNTY—Sinclair Prairie's Peabody Seating Co. 1, ne ne ne 35-6s-2w, lcn.

MAJOR COUNTY—Ed Parsons' Patzkowsky 1, cnw¼ 10-20n-11w, rig.

MUSKOGEE COUNTY — F. E. Cusack's Elliott 1, cnl nw sw 20-15n-20e, rog. Cusack's Fee 1, ne sw se 20-15n-20e, spd 65 ft.

OKFUSKEE COUNTY—Burke-Greis' Rhea 1, sw sw se 14-10n-9e, abnd 3910 ft. Mid-Continent's Ireland 1, sw ne sw 10-13n-10e, rig.

OKMULGEE COUNTY—Phillips' Wood 1, nw sw sw 31-11n-13e, spd.

PAYNE COUNTY—H. S. Brim et al's McKenzie 1, cwl se ne ne 13-18n-3e, lcn abn. Stanolind & Amerada's Bennett 1, nw se ne 31-19n-4e, dr 2490 ft. Mid-Continent et al's Ramsey 1, sw sw nw 18-18n-2e, rig.

PITTSBURG COUNTY—Okla. Dist. Oil Co.'s Beeler 1, ne ne sw 7-7n-14e, dr 5990 ft. Phillips' Gilcrease 1, nw nw se 16-7n-12e, td 5600 ft.

PONTOTOC COUNTY — H. W. Lee's Weatherly 1, nw se nw 24-1n-7e, rig. H. Riddle et al's Fee 1, nw sw se 11-3n-5e, lcn.

SEMINOLE COUNTY—Stanolind, Amerada & Mid-Continent's Salina 1, se ne nw 4-5n-6e, P. 90 bbls oil and 15 bbls wtr, 22 hrs, comp. J. F. Root's Cone 1, nw ne sw 11-7n-5e, c&p. W. P. Osborne et al's Harris 1, nw nw nw 11-6n-5e, bailing 2963 ft. W. C. McBride's Jackson 1, ne ne sw 16-6n-7e, dr 1080 ft. H. V. Woodson & Marydun Oil Co.'s Gilliland 1, se se sw 24-11n-7e, dr 852 ft.

STEPHENS COUNTY—Coline Oil Co.'s Johnson 1, sw se ne 1-2n-8w, hole bridged, running sand bailer. Ed Parsons et al's Blake 1, csw nw 22-2n-8w, td 6002 ft, pb 5020 ft, bailing 4700 ft.

WEST TEXAS

(This report is confined to Ordovician, Delaware and prospects west of the Pecos River).

BREWSTER COUNTY—Floyd C. Dodson & Duffy's Texas American Synd. 1-A, near c ne ne GH&SA Ry. sec 66, blk 10, elev 4228 ft, top Delaware shale 2297 ft, top Simpson 5980 ft, dr lime 6310 ft. Tony Hess et al's Mrs. M. Decie 1, sec 7, blk 1, Georgetown Ry. Co. sur, sd 925 ft. G. H. Storey et al's J. P. Wilson 1, c se nw of T. & St. L. Ry. sec 3, blk 212, elev 3609 ft, sd 2545 ft

CRANE COUNTY—Gulf Oil Corp.'s M. B. McKnight 3, near ne sw ne of PSL sec 9, blk B-21, Ordovician test, elev 2693 ft, dr 3060 ft; W. N. Waddell et al 6, c ne sw of PSL sec 4, blk E-27, elev 2549 ft, Ordovician test, top Simpson 5820 ft, top Ellenberger 6071 ft, tested 360 ft sul w at 6112 ft. Wilcox O&G Co. et al's M. B. McKnight 1, c se nw of G&MMB&A Ry. sec 9, blk 46, elev 2773 ft, Ordovician test, top Yates 2380 ft. fsh 6177 ft.

CROCKETT COUNTY—Moore Bros. Corp. et al's Paul Perner 1, c nw¼ of I&GN Ry. sec 37, blk 2, elev 2560 ft, Ordovician test, top lime 1600 ft, dr 7525 ft.

CULBERSON COUNTY—Jarrell, Earl Bell & Harrison's Caldwell 1, c sw of PSL sec 15, blk 109, Delaware test, sd 151 ft. Ross Brewer, Collins and Grisham-Hunter Corp.'s Caldwell 1, sw¼ of PSL sec 14, blk 42, Delaware test, good show oil 495-507 ft, exhausting, dr 640 ft.

JEFF DAVIS COUNTY — H. F. Wilcox O&G Co.'s Jones-Coffield 1, NEc of H&TC Ry. sec 121, blk 4, dr 3495 ft.

EL PASO COUNTY—Tri-State Oil Co.'s Chas. & L. M. Kinkel 1, ne ne ne sec 237, S.F. No. 7232, dr 3260 ft.

TOM GREEN COUNTY—Humble's Lewis & Wardlaw 1, near c ne se H&TC Ry. sec 5, blk 17, Ordovician test, elev 2142 ft, San Angelo lime 340 to 630 ft, dr 2970 ft.

HUDSPETH COUNTY—Haymon Krupp Oil & Land Co.'s K. S. Briggs 1, nw nw nw T&P Ry. sec 24, blk 73, Tsp. 7, run 12½ in csg 1570 ft; S. J. Thaxton 1, near SEc ne se T&P

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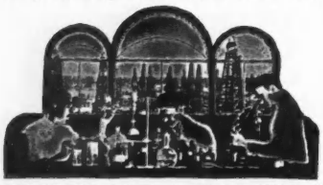

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OIL MAP COMPANY

Ry. sec 34, blk 74, Tsp. 6, salt water 3225 ft, trace oil 3242 ft, sd 3246 ft.

LOVING COUNTY—Barnett Pet. Corp.'s W. D. Johnson 1-A, se se ne T&P Ry. sec 12, blk 56, Tsp. 1, elev 3044 ft, Delaware test, show oil and gas, sd for shot 3728 ft. Carpenter, Grierson et al's B. Barnes 1, se se sw PSL sec 22, blk C-25, lcn. Michigan O&G Co.'s M. Kyle 5, ne ne se T&P Ry. sec 20, blk 55, Tsp. 1, lcn; M. Kyle 6, nw se ne sec 20, dr 2760 ft. Woodley Pet. Co.'s TP Land Trust 1, NWc n½ s½ of T&P Ry. sec 21, blk 55, Tsp. 1, co after shot, td 3962 ft.

PECOS COUNTY — Aero Gas Ref. Co.'s Johnson-Skelly 1-A, n½ of H&GN Ry. sec 40, blk 8, dr 1925 ft. Mike L. Benedum et al's J. C. Trees 1, sw sw sw H&GN Ry. sec 9, blk 8, Ordovician test, elev 2528 ft, td 4488 ft, r at 2412 ft to run 8¼ in csg. E. P. Cravens et al's J. C. Trees 1, ne nw se H&GN Ry. sec 63, blk 8, sd 2273 ft. J. J. Dorr et al's Payton 1, near se nw nw of H&GN Ry. sec 99, blk 8, elev 2439 ft, filled 1200 ft oih at 1980-2033 ft, testing. Ed Falvey et al's Joe C. Trees 1, sw nw nw of H&GN Ry. sec 63, blk 8, machine. D. W. Francis et al's Westerman 1-A, NWc 186 ac lse, Rubian Phares sur, blk 166, elev 3155 ft, tested 3,070,000 ft dry gas, 2820-60 ft, sd for csg. L. B. Hoss-F. J. Downey's Henry Cordez-Empire 1, NEc of H&GN Ry. sec 81, blk 8, elev 2433 ft, dr 1560 ft. Humble O&R Co.'s F. N. Belding 1, ne se sec 99, blk OW, elev 3085 ft, sandy-lime pay 2450-51 ft, tested 16.6 gravity oil, set 7 in csg 2603 ft, dr 2610 ft; H. H. Butz 1, sw¼ sec 104, blk OW, dr 520 ft; Ike T. Pryor 1, sw¼ sec 100, blk OW, dr 165 ft. Magnolia Pet. Co.-Superior Oil Corp.'s J. H. McKee 1-A, near nw nw sw H&GN Ry. sec 24, blk 9, Ordovician test, elev 2385 ft (jkd twice), trace gas 3100-03 ft, top Simpson 4775 ft, sd for titles 4928 ft. T. N. Sloan, F. E. Lewis and Sloan-Zook Co.'s Dow Puckett 1, sw sw sw of E.L. & RR Co. sec 3, blk 100, elev 3407 ft, top anhydrite 1335 ft, salt series 1755-1795 ft, dry and abd 2973 ft. Thompson & E. R. Minshall's Michaelson 1, c nw nw T. & St. L. Ry. sec 24, blk 146, elev 3023 ft, dr 810 ft. Stanley A. Thompson et al's Elsinore Cattle Co. 1, se¼ of GC&SF Ry. sec 53, blk D, Ordovician test, elev 3938 ft, fsh 6320 ft. Trans-Pecos Oil Co.'s F. M. Gallaher 1, ne ne nw T&P Ry. sec 9, blk 51, Tsp. 10, ur 10 in csg 1620 ft; Popham Land & Cattle Co. 1-B, s½ of GH&SA Ry. sec 235, blk 11 (3rd hole), co to run 10 in pipe 1540 ft. H. F. Wilcox O&G Co.'s Cerf 1, near c ne sw of T. & St. L. Ry. sec 27, blk 130, mim.

PRESIDIO COUNTY — Brite Production Co.'s L. C. Brite 1, ne¼ of GH&SA Ry. sec 113, blk 12, tested 2½ bbls oil daily at 4367-75 ft, co cavings 3100 ft, td 4375 ft.

REEVES COUNTY—Barnett Pet. Corp.-J. C. Hill and Continental Oil Co.'s Fly-Healy 1, c nw of PSL sec 38, blk 71, elev 3166 ft, Delaware test, top Castile 865 ft, sd 1823 ft. Grisham-Hunter Corp.'s T. P. Land Trust 1, ne¼ of T&P Ry. sec 40, blk 58, Tsp. 6, lcn. Ohio Oil Co.'s Popham Cattle & Land Co. 1, lcn.

SCHLEICHER COUNTY—John M. Cooper et al's Bert Page 2, c ne se GH&SA Ry. sec 40, blk L, elev 2289 ft, Ordovician test, cemented cave, td 4710 ft. Tex-Tor Oil Corp.'s Judkins-Spencer 1, c sw¼ of A. & B. sec 33, blk A, Ordovician test, elev 2235 ft, water sand 4653-50 ft, run csg 4960 ft.

SUTTON COUNTY—Ordovician Oil Co.'s J. T. Evans 1, ne ne ne sec 1, blk V-26, Lucy Stubblefield sur, elev 2126 ft, top Canyon, trace oil and gas, 2320 ft, top Strawn, carrying water with oil odor, 2860 ft, top Bend lime 3198 or 3315 ft, dr 3575 ft.

TERRELL COUNTY—R. A. Basurto et al's J. H. Phelps-Bates 1, near SEc nw¼ sec 5, G. W. Turley sur, A-4, Ordovician test, elev 2185 ft, sd 5600 ft. D. & S. Oil Co.'s Sam Bell 1, near SWc ne sw of E. L. & RR Co. sec 68, blk D-7, sd 345 ft.

WARD COUNTY — Magnolia's Geo. Sealy 1-79, c ne ne sec 79, blk F, G&MMB&A sur, Delaware test, elev 2622 ft, dr gray lime 3980 ft.

EAST TEXAS BORDER COUNTIES

HARRISON COUNTY—Ark. Fuel Oil Co.'s (Cities Service) C. M. Abney 1, Eason Wilson sur, dr 1375 ft (Trinity test). Eastern Shreveport Oil Co.'s Mable George 1, J. S. Powell sur, wosr td 2505 ft.

PANOLA COUNTY—Danciger O&R Co.'s J. W. Tatum 1, Alfred Bissell sur, massive anhydrite 4880-5175 ft, 5-3/16 in csg 6350 ft, arr abn td 6514 ft. Magnolia Pet. Co.'s E. A. Hull 2, Thos. Applewhite sur, elev 222 ft, top Travis Peak 6024 ft, top lower Marine 8078 ft, pb to Travis Peak, testing at 6070 ft, old td 8718 ft. C. K. Crews' J. C. Graves 1, McGowan sur, spd dr 500 ft.

SHELBY COUNTY—Allen et al's George 1, C. C. Tutt sur, sd 2950 ft. C. L. Cope's Pickering Lbr. Co. 1, Stephen English sur, rur. Portex Oil Co.'s Pickering Lbr. Co. 3, A. Hanson sur, rur. Redditt & Gray's Pickering Lbr. Co. 2, S. O. Pennington sur, rur. D. S. Ring's Windham 2, Jas. English sur, mim.

SOUTH TEXAS

SAN ANTONIO DISTRICT

ATASCOSA COUNTY—L. W. Stieren's T. A. Crawford 1, J. O. Crawford sur 69, was shut down at 3476 ft, now swabbing again, water came in hole, killed gas show, had slight oil show.

BASTROP COUNTY—J. W. Bibb et al's O. B. Lentz 1, F. Wilkinson sur, coring 2395 ft. Southern Cross Oil Co.'s H. Smith 1, J. B. Blalock sur, lcn.

BEXAR COUNTY—H. S. Ball & A. D. DuBose's F. & Maud Miller 1, J. Christopher sur 55, prep to mi rotary.

CALDWELL COUNTY—Grady Kraft's A. M. Cardwell 1, Pablo Martinez sur 9, drk. I. H. Wilson's C. A. Alexander, D. Benton sur, sd 1850 ft.

EDWARDS COUNTY—Dan Auld et al's L. K. Henderson Est. 1, HE&WT sur, hole full wtr, 1845-65 ft. Amon G. Carter et al's Frank J. Sweeten Ranch 1, GC&SF sur, sd 5112 ft.

FRIO COUNTY—Amerada's R. Melms 1, N. C. Alexander sur, dr 2895 ft. Pagenkopf & Jamieson's Houston Estate 1, Juan Figuerroa sur, still experimenting, to deepen around first of year.

GONZALES COUNTY—W. B. Osborne's Wells Ranch 1, sec 8, Wells Ranch subd, dr 3265 ft.

GUADALUPE COUNTY — Al Buchanan Prod. Co.'s M. T. Howell, J. Darst sur, still lcn. Housel Oil Corp.'s N. J. Carter 2, S. Highsmith sur, set 6 in at 2114 ft, acid w/50 qts, nitro, td 2315 ft. Riddle Oil Co.'s C. A. Krueger 1, J. M. Thompson sur, sd 710 ft.

KENDALL COUNTY — Landon & Holifield's C. A. Sidensticker 1, sur 257, moved off rotary, ru cable, td 532 ft.

MAVERICK COUNTY—Wellington's Chittim Ranch 1, I&GN RR sur, testing 3287 ft, no gauge or estimate.

MILAM COUNTY—M. L. Walker's E. Riff 1, L. Hans sur 43, sd 910 ft.

TRAVIS COUNTY—LaShelle & Gardner's A. T. Giles 1, W. N. Sanders sur, sd 725 ft.

WILSON COUNTY—Pattico Oil Co.'s Mrs. B. Keller 1, Karnes County School Lands sur, ru, ready to spud.

ZAVALA COUNTY—H. F. Wilcox O&G Co.'s T. J. Gilliam 2, GWT&P sec 11, coring 3422 ft.

LAREDO DISTRICT

DUVAL COUNTY—J. L. Collins & Co.'s E. R. Hagist 1, BS&F sur 267, abnd 2323 ft. Gravis' F. Vaello et al 1-A, San Andres gr, coring 4920 ft, test at abt 4835, rec considerable salt wtr; R. Schallert 1, sur 239, set 10¾ in at 1000 ft, wocs. John H. Hougen, Tr's W. H. Patton, tr 1, sur 148, dr 4130 ft. Magnolia's F. Lopez 1, sur 82, dr wtr well, mim. Rudco's K. L. Ellis 1, GC&SF sur 308, sd 2378 ft. Slaughter & Hugle's J. B. Hunter Est. 1, J. Poitevent sur, abnd 4732 ft. Taylor Ref. Co.'s Atlee Parr 2, sur 279, dr 4780 ft.

JIM HOGG COUNTY—Darby Pet. Co.'s R. Holbein 1-C, sec 20, spudded.

McMULLEN COUNTY—H. K. Boysen et al's Munson Ranch 1, CEPI&M sur 161, abnd 2011 ft. C. C. Shumway's Shiner Ranch 12, G. J. Goode sur, dr 815 ft.

STARR COUNTY—J. L. Collins & Co.'s A. Guerra 1, sh 6, ran elec. formation tester, in sh 6176 ft, sand 6126-40 ft, 7 in. at 6176 ft, will perf 6126-30 on 12-2-37. Dean Bros.' Miguel Valadez 1, por 84, comp 5½ in. at 1873 ft, sand 1866-72 ft, est 30 bpd, pump, 25 percent slt wtr. Lowe & Ely's Gonzales 1, J. of Camargo, lcn. Sun's H. P. Guerra 1-F, J. S. Garcia gr, dr 3610 ft. Transwestern's Slick School 1, sur 266, sd, woo 6860 ft.

WEBB COUNTY — Mills Bennett Prod. Co.'s A. E. Gates 2, CC SD & RG NG RR sur, dr 1009 ft. Bridwells Oil Co.'s A. S. Billings 1, sur 36, dr wtr well. O. W. Killam's A. M. Bruni Est. 4, sur 585, dr 1600 ft. Kirkwood & Morgan's Garcia & Villareal 1, sur 720, dr 810 ft. Lemp Oil Co.'s N. H. Clark 1, por 33, dr 1155 ft. Moore & Meaders' Garcia & Villareal, sur 338, dst 2407-20, dev. 500 pounds pressure, 5 min, coring ahead 2420 ft. G. G. Mortimer's Welhausen 1, CCSD&RGNG RR sur, pits dug.

ZAPATA COUNTY—W. C. Bob's J. M. Martinez 2, blk 22, testing 990 ft. Ray L. Martin's S. Vela 1, blk 77, ru.

CORPUS CHRISTI DISTRICT

BROOKS COUNTY—Standard of Texas' Mestina O&G Co. 10 (lse. 1), coring ahead 3013 ft; Mestina O&G Co. 3 (lse. 2), mir.

DE WITT COUNTY—Trinity Pet. Co.'s C. D. Boltin 1, R. Galletty sur, ru partly delayed by weather.

GOLIAD COUNTY—Goliad Oil Co.'s S. E. Cole 1-A, lot 33, failed to rec. anything thru perfs 5080-5100 ft, may abnd, td 5687 ft. R. B. Swiger's Carrie Wood 1-B, J. Shearn sur, will perf 12-1-37, td 5043 ft.

HIDALGO COUNTY—Atlantic's Mrs. E.

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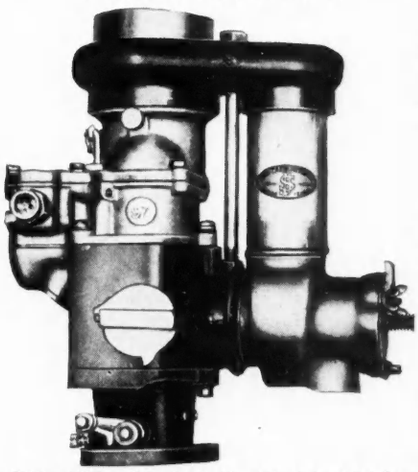

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T. McCalip 1, sec 175, cored to 8626 ft, tried to blow out w/2100 pounds pres, now coring ahead 8636 ft. Gulf States' Delta Orchards 2, sec 94, dr 6855 ft. Y. & B. Oil Co.'s Waite Bros. 1, sh 382, wshg down to dr ahead to 8000 ft.

JACKSON COUNTY—Sam G. Harrison's H. A. Meyer 1, M. L. York sur, dr 3416 ft. Magnolia's A. West Ranch, R. Musquiz sur, dr 75 ft.

JIM WELLS COUNTY—Tom Graham et al's J. J. O'Donnell 1, sec 81, td 2337 ft, comp. est. 75 bpd, thru perfs. H. M. Hill et al's B. Kiether 1, SK&K sur, sd for orders 2905 ft. H. H. Howell et al's J. R. Talbert Est. 1, La Vaca gr, wshg, showing some gas, td 5530 ft. Magnolia's A. A. Seeligson 7, perforating 8165 ft. H. J. Porter's Chas. Wolcott 1, tr 23, dr 3825 ft. Yukon Oil Co.'s Mrs. R. Schaefer 1, E. Cuellar sur 11, dr 5070 ft.

KARNES COUNTY—Ivan Howard's F. P. Moczygamba 1, E. Seguin sur 5, sd 2515 ft.

KLEBERG COUNTY — Magnolia's Anton Dietz 1, sec 7, ru.

KENEDY COUNTY—Sal Vieja Oil Corp.'s Garcia Land & Cattle Co. 1, San Juan de Carricitos gr, dr 7185 ft.

LIVE OAK COUNTY—James B. Chew & Hantho-Nelson's A. McNeill Bell 1, A. Parks sur, spudded. Charles Hannah's C. H. Wedding 1, Bridget Haughy sur 1, abnd 1890 ft. Hantho-Nelson's George West Est. 1, G. L. Hass sur 59, drk. Holland Oil Co.'s Alamo Lumber Co. J. Poitevent sur 99, abnd 1709 ft. Loma Oil Co.'s Pfluger 1, J. Turner sur, ru. Ranco Oil Corp.'s Fee 1, J. Poitevent sur, dr 1925 ft. Reynosa Oil Co.'s W. O. Nichols 1-A, S. Ryan sur, sd, woo, 1482 ft. J. H. Turner's Dow Young 1, L. Ayres sur, dr rock 192 ft.

NUECES COUNTY—Camp. Prod. Co.'s C. P. Wardner, Tr. 3, sec 13, dr 5225 ft. Culton & Meaders' J. L. Bailey Est. 1, blk 65, dr 6175 ft. L. A. Douglas' Charles McKinzie 1, BS&F sur 419, spudded. Richardson's J. O. Chapman 1, sec 43, set sur csg, woc. Sannix Oil Co.'s Emil Nesloney 1, Casa Blanca gr, dr 5710 ft. Southern Minerals' R. King 3, blk 6, ru; Ida Walker 1, sec 40, R. King sur, ru. Sultex' L. M. Vance 5, T. Gallagher sur, owdd, comp perf 3971-84 ft, est 10 mcf, 1600 pounds rock pressure. Union Prod. Co.'s C. L. Galaday et al 1, R. Garcia gr, dr 4910 ft; A. B. Simmonds 1, Agua Dulce gr, dr 6110 ft.

REFUGIO COUNTY—Hogan Oil Co.'s J. S. Kelly 1, James Power sur, coring 6150 ft.

SAN PATRICIO COUNTY — Argo Oil Corp.'s A. Soehnge 1, P. J. & M. Delgado gr, swabbing 6310 ft. A. L. Bob's J. F. Green Est. 2, T. T. Williamson sur, sd 3505 ft. Pat Rutherford & Tide Water's W. T. George 1, Robt. Saddler & Juan Garcia surs, dr 3810 ft.

VICTORIA COUNTY—W. V. Bowles & Co.'s D. L. Robertson Est. 1, T. C. Burnham sur, abnd 6138 ft. Gulf's Mahon & Buehler 1, J. Poitevent sur 2, sd 7605 ft. Stanolind's Henderson & Pickering 1, E. Benavides sur, set 7 in. at 6347 ft, perforating in 5300-ft sand.

WILLACY COUNTY—Magnolia's Armendiaz 1, sh 4, sd, dr wtr well 7145 ft. Shell's Yturria Cattle Co. 2, sh 64, coring sand and sh, no shows 8328 ft.

TEXAS GULF COAST

BRAZORIA COUNTY — Pure's Smith 1, Peach Point prospect, S. F. Austin sur, dr shale 6629 ft.

CHAMBERS COUNTY—Ingot & Merit Oil Co.'s Wright 1, Cedar Bayou area, C. Smith sur, dead 6433 ft.

COLORADO COUNTY—O. C. Garvey's B. Ernest 1, n of Eagle Lake, M. Lapham sur, dr shale 5321 ft.

GALVESTON COUNTY—Sun's Cade & Co. 1, Bolivar prospect, A. Dickson sur, lcn.

FT. BEND COUNTY—Chapman Minerals Corp.'s Sugarland Industries 1, s of Sugarland, G. Brown sur, dr shale 7461 ft.

HARDIN COUNTY—J. G. Mayo et al's Haden 1, Gragg area, W. K. Griffin sur, dr shale 5468 ft.

HARRIS COUNTY — H. C. Cockburn's White 1, Houston Ship Channel, Harris & Carpenter sur, dr shale 5679 ft. H. J. De Arman's Gieseke 1, Suffsmith area, J. Bunker sur, dr shale 3100 ft.

JEFFERSON COUNTY—J. E. Harwell's State 1, in Gulf of Mexico, block 720, driving piling. G. H. McCarthy's Broussard Trust 1, Little Pine Island area, C. Hillibrandt sur, dr shale 2990 ft. Shell's McFaddin 1, McFaddin Ranch area, S. A. Pace sur, coring shale 5469 ft.

LIBERTY COUNTY—Humble's Moore 1, Devers area, M. Whittington sur, abn 6500 ft.

MATAGORDA COUNTY—Sun's Robbins 1, n of Citrus Grove, C. H. Vandeveer sur, dr shale 7344 ft.

POLK COUNTY — National Standard Oil Co.'s Carter Brothers 1, n of Segno, M. S. Womack sur, woc 60 ft.

WALLER COUNTY—J. Bryan Eby et al's Rice 1, Waller prospect, J. H. Stephenson sur, dr shale 6920 ft.

WHARTON COUNTY—Strake's Strunk 1, Lissie area, L. P. Jennings sur, dr shale 1030 ft. Texas Co.'s Johnson 1, Hillje prospect, J. Bognel sur, dr shale 2375 ft.

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NEW PRODUCTS FOR THE FIELD
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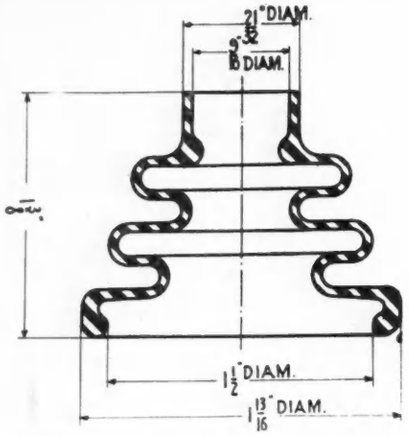
FLEXIBLE TYPE COUPLINGS
B. H. Pierce Manufacturing Company

B. H. Pierce Manufacturing Company recently developed a flexible type coupling for plain-end pipes. The coupler, shown in cross section in the accompanying illustration, permits substantial changes in alignment and takes care of expansion and contraction in a pipe line. The construction is such that the pressure of the water or other fluid is utilized in holding the joint tight against leakage.



Pierce Flexible Type Coupling for Plain End Pipes

With the couplers, a pipe line can be assembled as fast as it can be placed in position and without tools of any kind, it is claimed. For use on water lines, the gaskets used are made of a live rubber composition. For lines used for oil, gas and certain chemicals the manufacturers use gaskets made from a neoprene compound. This material exhibits resilience, elasticity, strength, and abrasion resistance. It maintains its original properties virtually unchanged even after extended exposure to oils, chemicals, heat, and sunlight, the manufacturer states.

CHASER COLLAPSIBLE TAP
Landis Machine Company

Landis Machine Company, Waynesboro, Pennsylvania, recently announced a new addition to its line of collapsible and receding chaser collapsible taps.

This new type tap, known as Landis 3AIM, is of the receding chaser type that possesses, according to the manufacturer, a number of features which greatly increase the efficiency of its performance, both in the accuracy of the threads it produces and in the length of life of the chaser between grinds. This tap is made of high-carbon steel, and all parts are heat treated and precision ground. All surfaces that have a sliding contact that may cause excess wear are hardened.

The 3AIM tap designed primarily for the tapping of couplings, etc., may be applied to any machine employing a live spindle and where the resetting action is done automatically. There is no manually operated model.

The internal mechanism of this tap is similar to the standard LM tap in that it employs a cross rail slide cam to control the taper. It is possible to trip the tap at any position by merely adjusting a tripping bar so that it contacts the tripping "button" located in the body of the tap near the shank end.

An extremely simple adjustment is provided for taper change and for taper correction. This tap may be used for any taper of thread hand-ranging from 0, or straight threads, to ¾" taper per foot, and may be changed by infinitesimal degrees. To change taper or to adjust for a slight error it is merely necessary to release a locking screw in the control collar and move the taper indicator. Taper on the 3AIM tap is controlled at all times and may be held within very close limits. Another feature of the 3AIM tap is the method by which the cutting coolant is directed to the cutting edges of the chaser, assuring greater tool life and a better quality of thread.

The range of the 3AIM tap is from 2" to 4" inclusive, and the same tap heads may be employed as are used on the standard 4LM Receding chaser tap. This tap is fully enclosed, eliminating the possibility of chips or dirt entering to cause excess wear to the working parts.

CABLE-TOOL BIT
Byron Jackson Company

Byron Jackson BJ Cable Tool Bit

Byron Jackson Company, Los Angeles, California, recently designed and placed on the market the BJ straight-hole cable-tool bit, which has been designed to make straight hole in all formations, to make hole faster and to full gauge and eliminate tight holes.

Developed for drilling in any type of formation with cable tools, this tool consists of a pilot bit above which is a concentric reamer and stabilizer. The reamer is an integral part of the bit and there are no joints and no expanding or detachable parts. The length of the pilot bit is longer than the normal drilling stroke that insures that the pilot bit always will remain in the pilot hole, thus serving as a positive straight-hole guide. The small diameter of the pilot permits it to penetrate hard formations, or formations with a steep pitch, with far less danger of deviating from the vertical than when a larger diameter bit is used.

The bit is made in 9 sizes for holes ranging from 8¼ to 24 inches in diameter with the pilot hole from 6 to 12 inches, respectively. The length of pilot is 8 feet in the 8¼- and 10-inch size, and 10 feet in the sizes from 12¼ to 24 inches.

PLASTIC MATERIAL
American Concrete and Steel Pipe Company

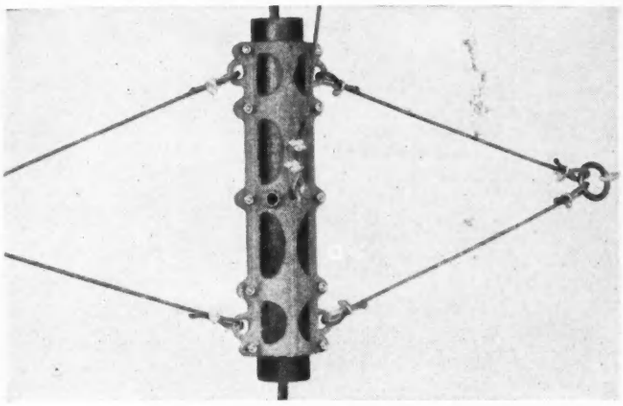
American Concrete and Steel Pipe Company, Box 1428, Arcade Station, Los Angeles, California, recently announced a new sprayable corrosion-resistant plastic material, known as Amercoat.

This material is the result of extensive research, experiment and development, and more than two years of laboratory and field testing have proved its efficiency. While Amercoat is not designed to resist abrasion as well as corrosion, it is a synthetic plastic which has the necessary strength and resiliency to give it considerable resistance to the abrasive action of solids or liquids that may come in contact with it. It has a tensile strength of well over 200 pounds per square inch and smooth semi-glazed surface. According to the manufacturer, its abrasion resistant properties are quite comparable to those of rubber, Bakelite and similar substances.

WIRE LINE GUIDE

Patterson-Ballagh Corporation

Patterson-Ballagh Corporation, Los Angeles, California, recently placed on the market a new wire line guide, utilizing tough rubber at points of friction. It is claimed that the guide is made spark-proof no matter how fast the line travels or in what position the guide is set.



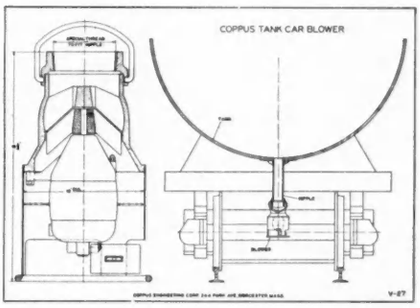
Patterson-Ballagh Wire Line Guide

The new product permits uniform spooling of the wire line, eliminates whipping and increases the life of the line. It consists of a tough rubber retaining sleeve through which the wire line runs and is housed in a strong metal body, held in taut position by side lines. Replacements can be made without lowering the guide or disturbing line.

TANK CAR BLOWER

Coppus Engineering Corporation

Coppus Engineering Corporation, Worcester, Massachusetts, recently developed a new tank car blower, weighing about 55 pounds and using a ¼-horsepower totally enclosed motor.



The new blower is provided with a coupling for attachment to the nipple at the bottom of the tank car. The unit will deliver approximately 600 cubic feet of air per minute which is said to be sufficient to thoroughly ventilate a tank car, and to supply fresh air to men working within the car.

METAL TESTER

Teleweld, Incorporated

Teleweld, Incorporated, Railway Exchange Building, Chicago, announces development of a light weight, portable Brinell instrument that can be carried to the job for testing metal hardness in the field.

Known as the Telebrineller, the instrument was developed to check and control the rebuilding and heat treating of rail ends on the right-of-way. Its simplicity, convenience and ease with which it can be carried are indicated by the fact that the combined weight of the outfit and carrying case is only 6½ pounds. According to the manufacturer, it is not affected by hot or cold weather and is built to stand hard use. No training or previous experience, it is claimed is necessary to operate it accurately.

In addition to its more obvious uses in many types of plants throughout the metallurgic industries, it is used in a number of oil refineries to test parent metal adjacent

● Have you seen the new RIGID Wrench? Stronger and safer than ever — greater thickness of special alloy metal in the unconditionally guaranteed housing and improved design. With its chrome molybdenum alloy safety jaws and alloy handle, it practically ends your broken wrench problem and expense.

No wonder RIGID has millions of users all over the world. Replaceable jaws are slip-and-lock-proof. Handy pipe scale on full-floating hook jaw. Adjusting nut spins easily in all sizes, 6" to 60". Comfortable grip handle. End pattern for pipes against flat surfaces.

Test the RIGID any way against any other wrench. You'll like the "feel" of it, its safety, its economy. Order from your Supply House — today.

The Ridge Tool Company, Elyria, Ohio

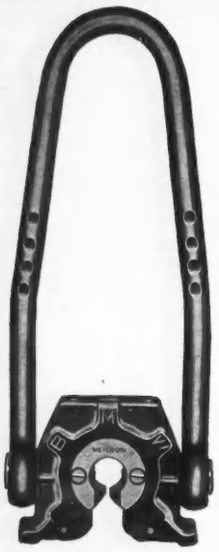
This RIGID Wrench Saves Man-Power

RIGID Compound-Leverage Wrench makes one man strong as six — pays for itself quickly in salvaged fittings.

RIGID PIPE TOOLS

AMPLY STRONG

Guaranteed



When in need of

Sucker Rod Elevators

be sure to specify the best obtainable . .

B-M-W

Neilson Type C

Molybdenum steel bodies with forged bails make them amply strong and safe. Easily operated. Spring and plates are quickly replaced. Plates are interchangeable. Two latches. Each latch, alone, will hold the rod. Two sizes—for light and heavy duty.

AT SUPPLY STORES

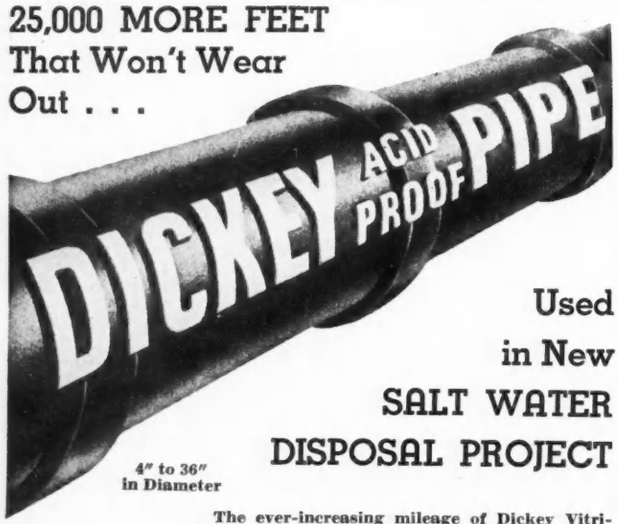
Principal B-M-W Products are obtainable at supply stores, including: ● ADMORE Insert Pump Anchors ● NEILSON Tools (Safety Sucker Rod Hooks, Tubing Hooks, Rod Elevators, Sucker Rod Sockets, etc.) ● BALLS AND SEATS (made for every pumping service) ● ADMORE Liner Barrels ● TEX TYPE Plunger Fittings and Valves; and ● COLLINS Belt Clamps.

BRADFORD MOTOR WORKS INC.

OIL WELL SUPPLIES

BRADFORD, PA. — TULSA, OKLA.

25,000 MORE FEET That Won't Wear Out . . .



4" to 36" in Diameter

Used in New SALT WATER DISPOSAL PROJECT

The ever-increasing mileage of Dickey Vitrified Salt-Glazed Clay Pipe is again boosted by a new salt water disposal project in the Crescent Field of Oklahoma. Dickey Clay Pipe was selected because it is absolutely impervious to the action of salt, acid or chemicals of any kind when jointed with an asphalt compound.

BIG SAVING

This type of construction will not corrode or disintegrate, lasts indefinitely and costs much less than other types.

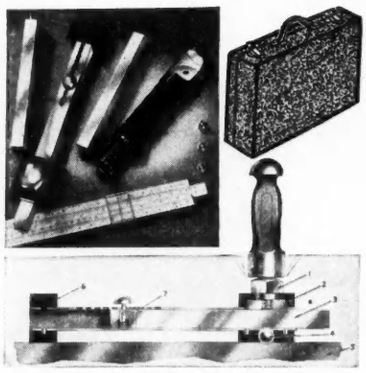
Dickey Pipe is always available in 4 to 36-inch sizes. Shipments made promptly.

ASK ABOUT LOW PRICES!

W. S. DICKEY CLAY MFG. CO.

TEXARKANA, TEX.-ARK.

to welded joints in alloy steel pipe in high-pressure and hot oil lines which welding and vibration are claimed to harden beyond the safety point, heat exchangers, castings and other equipment.



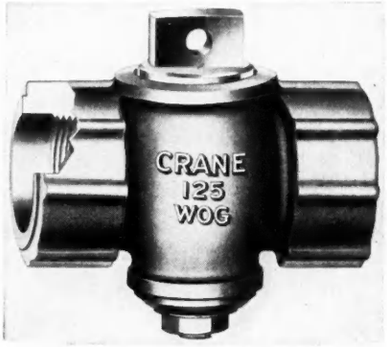
Teleweld Portable Brinell Instrument

The outfit is composed of the Telebrineller instrument proper, a bar of known hardness, a microscope with a scale etched in its focal plane and a slide rule, packed with extra test bars and impression balls in a small case.

IRON GAS LINE COCKS

Crane Company

Crane Company, 836 South Michigan Avenue, Chicago, Illinois, recently announced development of a new cock with recessed ends for use on curb box installations. These new cocks are recessed at each end sufficiently to cover the entire threaded pipe surface. When the recesses are filled with a lubricant or paint to seal the space between the pipe and the inside of the cock opening, it protects both the cock and the pipe threads from outside contamination, thereby not only making a perfect connection, but adding years to the life of the installation.



Crane Iron Gas Line Cock

The cocks are made with flat head, brass plug and washer. The body is of galvanized iron, in sizes ¾, 1 and 1¼-inch. They are air-tested to assure tightness, and are recommended for non-shock working pressure of 125 pounds cold water, oil, air or gas.

STABBING ELEVATOR AND PIPE GRAB

Foster Specialty Company

The Foster Specialty Company, Wichita Falls, Texas, recently announced the development of new type stabbing elevators and pipe grabs.

The "Lock-On" stabbing elevator for stabbing casing, laying down drill pipes, rat hole connections and the like, has several advantages, which may be summed up as follows: it locks on securely while joint is flat on walk; the locking cam latches to prevent accidental unlocking; the pipe can be lifted straight for stabbing and the pipe may be laid flat on walk before elevator is removed.

Features of the "Devil's Claw" pipe grab include the possibility of attaching the grab without lifting pipe from walk. When the grab is attached toward the center of the joint, it leaves space to attach regular elevators and allows the pipe to be pulled in without raising it high in the vee. It is suitable for holding pipe during rat hole connections, if provided with a suitable rest at the top of the rat hole.

This Week with the Industry's EQUIPMENT SUPPLIERS

A. O. Smith Corporation Buys Smith Meter Company

A. O. Smith Corporation, Milwaukee, Wisconsin, recently announced the purchase of Smith Meter Company, Los Angeles, California, manufacturers of rotary truck, loading rack, and refinery meters. Reorganization of manufacturing and sales departments is now in progress to increase production of the company.

Larkin Packer Company Increases Personnel

Larkin Packer Company, St. Louis, Missouri, has made the following additions to its field organization:

C. W. Woodward has been appointed sales representative in the new Illinois field, with headquarters at Salem, Illinois. U. S. Akin will represent the company in extreme West Texas and New Mexico, with headquarters at Monahans, Texas. Wm. Fredericks will operate in the Panhandle district, working out of Lubbock, Texas.

The company is also installing a new warehouse at Great Ben, Kansas, to be supervised by Bill Baumann, and assisted by warehouseman, Ollie Holmes, formerly at the Hobbs, New Mexico, warehouse.

Cavins Company Executives On Business Trip

The Cavins Company, Long Beach, California, announces that R. H. Griffin, manufacturing superintendent, and F. M. Kehoe, in charge of research and development at the home office, are on an extensive business trip through the Mid-Continent fields. They plan to spend some time at each of the company's agencies with a view of thoroughly checking developments of the Cavins hydraulic suction bailer and perforation washer in the various oil fields.

Wilson Diesel Rig for California Operator

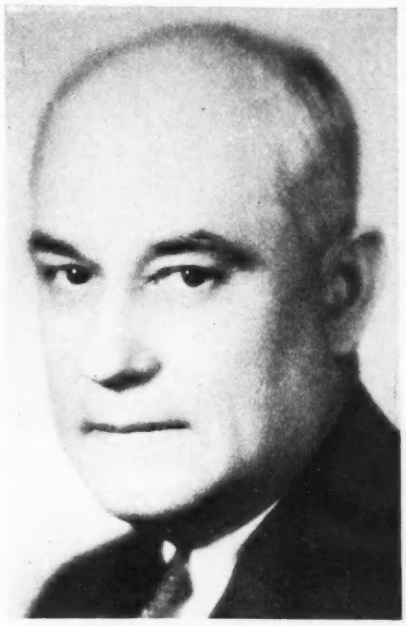
Kern Drilling Company of Bakersfield has recently taken delivery of a Wilson portable drilling rig powered with two Diesel engines. The Cummins 200-horsepower, type L-6 engines are mounted on a structural steel base to drive the draw works and the slush pump. Each engine has six cylinders and develops its rated power at 800 r.p.m.

Because of the light weight and compact size of the Cummins Diesels, the Wilson rig purchased by Kern Drilling Company is easily moved from one operation to another. This unit is the first of its type used in California fields.

Republic Rubber Division Holds Conference

Republic Rubber Division of Lee Rubber and Tire Corporation, Youngstown, Ohio, held its annual sales conference on October 26, 27, 28, and 29.

The conference comprised four days of interesting and instructive meetings, covering a wide range of topics having to do with the manufacture and distribution of Republic products. New products were introduced and recent developments thoroughly explained, and the sales and sales promotional program for the coming year was gone into in separate meetings.



W. C. HEATH
President of A. O. Smith Corporation

Billings Appoints Hagar Field Supervisor

Billings & Spencer Company, Hartford, Connecticut, announces the appointment of Jack Hagar as field supervisor for its merchandise tool division.

Hagar's training and experience, covering 14 years as manufacturers representative and 5 years as industrial distributor representative, particularly fits him to understand the industrial distributors problems and how the industrial distributor can best be served.

Billings merchandise tool sales organization now consists of 11 field representatives. The field supervision of these men is a part of Hagar's duties, in addition he will work with and through the industrial distributors, assisting them in increasing their forged tool volume.

Jim Hughes Resigns From Eastman Company

James D. Hughes, who has served in various executive positions with Eastman Oil Well Survey Company since its inception, and who has done a great deal toward the development of directional drilling, has resigned as vice president of the company in order to devote all his time to personal ventures.

H. R. Gruber heads Tulsa "Old Timers" Committee

The chairman of the "old timers" committee for the Tenth International Petroleum Exposition is to be H. R. Gruber, vice president and sales manager of the Union Wire Rope Corporation of Tulsa, according to an announcement.

Gruber in accepting the position said that the committee would be organized immediately.

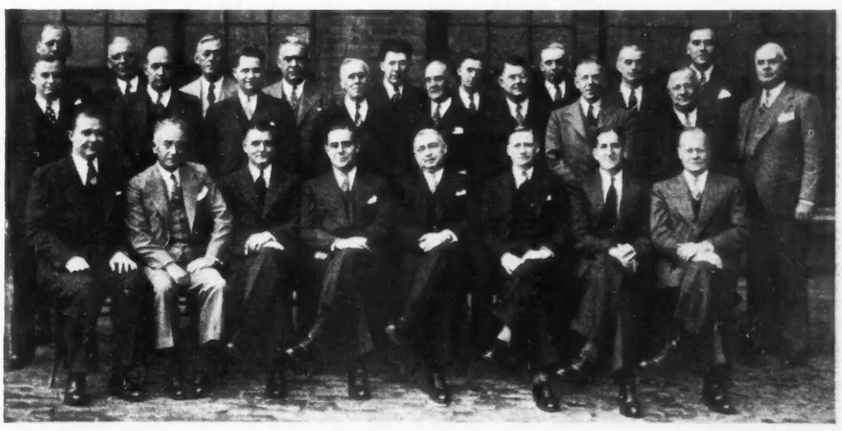
The committee is to have charge of "old timers" activities during the May 14 to 21, 1938 oil show, and will make the honorary awards.

The awards of "grand old man of the oil industry," and "grand old man of Tulsa," has been one of the outstanding features of the Tulsa oil show since 1927.

A fitting ceremony and medals are awarded the "old timers," selected by the committee.

"The exposition has set aside one day during each show to honor these pioneers who have served the industry and contributed the greatest part of their lives to the progress of an industry which is the hub of the nation's industrial mechanism," said Gruber.

"Awards are made to the oil men

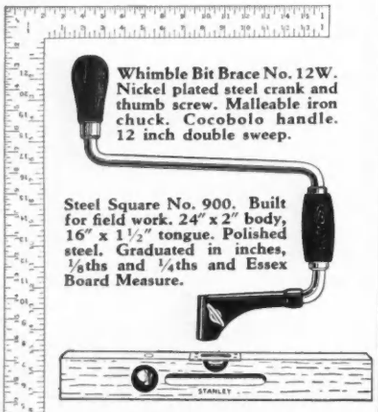


Attending Republic Rubber Division's Sales Conference; reading from left to right, seated: E. M. Ikirt, assistant treasurer; R. M. Gattshall, southern district manager; G. L. Smith, assistant sales manager; H. P. Schultz, sales manager; O. S. Dollison, vice president in charge of sales; H. W. Croysdale, vice president and factory manager; A. Brill, development manager; C. H. Zieme, service engineer. Standing: C. R. Conklin; T. D. Britton; C. W. Stanton; S. R. Colucci; J. F. Vogt; H. H. Sprinkle; A. A. Schley; J. P. Bird, assistant manager mechanical sales; M. W. Clark; N. M. Grove; C. P. Nolte; A. W. Carriere; J. H. Vandawarker; C. R. Case; M. D. Cooper; F. H. Howard; M. C. Meyer, and T. H. Voss.

WORKING TOOLS FOR *Working* MEN

They are made for men who know good tools. Smooth working, accurate. For day-after-day *service*.

Ratchet Bit Brace No. 923. Steel-clad head turns freely on ball bearings and long wearing bronze bushing. Strong, sturdy box ratchet. Selected Cocobolo head and handle. Improved chuck has forged and hardened universal jaws, locked in so they will not bend, jam or slip. It holds straight shank bits and drills from ⅛" to ½" and taper shanks as large as Clark's No. 2 expansive bit. Nut and cotter pin lock entire chuck in place. Five sizes from 6" to 14" sweep.



Whimble Bit Brace No. 12W. Nickel plated steel crank and thumb screw. Malleable iron chuck. Cocobolo handle. 12 inch double sweep.

Steel Square No. 900. Built for field work. 24" x 2" body, 16" x 1½" tongue. Polished steel. Graduated in inches, ⅛ths and ¼ths and Essex Board Measure.

Wood Plumb and Level No. 0. A rugged level of seasoned hardwood, highly finished. "Handy Grip" for convenience in handling. Clear, easy-to-read, proved glasses. Four lengths: 24", 26", 28", 30".

Write today for free Catalog No. 34 describing these and many other sturdy Stanley Tools for oil field use.

STANLEY TOOLS

NEW BRITAIN, CONN.

STANLEY and STANLEY-ATHA TOOLS

Nail Hammers
Machinists Hammers
Blacksmiths Tools
Soft Face Hammers
Sledges
Tongs
Ripping Bars
Ripping Chisels
Cold Chisels
Punches
Bit Braces
Screw Drivers
Steel Squares
Rules
Levels
Anvil Tools

H. R. GRUBER
Chairman of the "Old Timers" committee of the Tenth International Petroleum Exposition.

who have not only served the industry the greatest number of years but also to those who have made the greatest contribution," he said.

As in the past years, the replica of the old Drake well, constructed on the exposition grounds, will serve as the general meeting place of the "old timers" and will be their club house during the show.

W. B. Way, manager of the exposition, has announced that the committee also will have charge of the consideration and selection of a suitable memorial to the "old timers," which is to be unveiled during the May exposition.

Foote Bros. Appoints Hoppe California Representative

Foote Bros. Gear and Machine Corporation, 5301 South Western Boulevard, Chicago, has appointed Walter A. Hoppe, 948 South Grand Avenue, Los Angeles, as representative in the southern part of California.

Hoppe is a mechanical engineer with 17 years experience in the power-transmission equipment field.

Wechter Heads Worthington Pump Atlantic Division

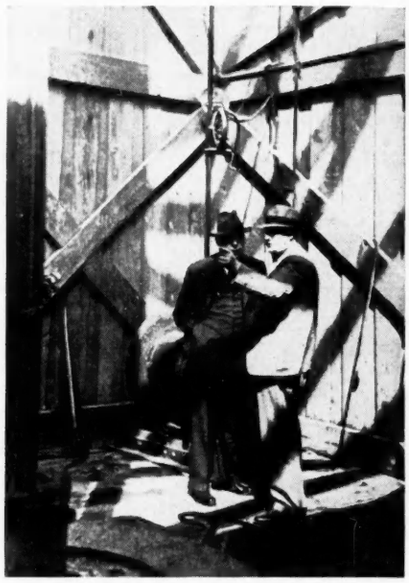
Worthington Pump & Machinery Corporation, Harrison, New Jersey, recently announced appointment of W. E. Wechter as Atlantic division manager of oil and gas engine sales, succeeding R. L. Howes who recently resigned.

In his new duties Wechter will supervise oil and gas engine sales in the Atlantic seaboard territory, in which the company's offices at Boston, New York, Philadelphia, Washington and Atlanta are located.

Since his graduation from Purdue University in 1923, Wechter has been connected with the Worthington organization, having held successively the positions of salesman in Atlanta territory, Atlanta district sales manager, Detroit district sales manager, and assistant manager of the oil and gas engine division at Harrison. He will now make his headquarters at the company's office, 2 Park Avenue, New York.

W. R. Martin in Roumania on world tour

W. R. Martin, president of Martin-Decker Corporation, Long Beach, California, left last July on a trip around the world and will visit all major production centers, learning first hand the particular production and drilling problems in each territory.



W. R. Martin (left) and R. Koste (right) on a Roumanian well

In the course of this world tour Martin recently was snapped getting the fine points on Roumanian drilling technique.

Corpus Christi plant doubling crude throughput

Corpus Christi. — Construction has started on a unit to increase capacity of Amsco Refining Corporation's plant here to 10,000 barrels per day, to be in operation before March 1.

No details of the type plant have been announced, but it is said that it will increase the variety of products processed. The concern now manufactures painters' naphtha and burning oil. The new unit doubles the size of the present operation.

Amsco Pipe Line Company, an affiliate concern, is completing a 12-mile 4½-inch line from the Luby field, Nueces County, to its Clarkwood station, where it will tie into the regular system leading to Corpus Christi. The Amsco concerns recently acquired the Potter Pipe Line Company system, including pipe lines and gathering units in the Saxet and Saxet Heights fields, as well as a terminal in the Corpus Christi Ship Channel area.

Amsco is a unit of the American Mineral Spirits Company and is one of the largest manufacturers of painters' supplies in the world.

CATALOGS . . . BULLETINS

Helpful Publications Which Manufacturers Will Be Glad to Send Free for the Asking

Hard-Facing

A new and more complete edition of the booklet, "Hard-Facing with Haynes Stellite Products," is being issued by Haynes Stellite Company, Kokomo, Indiana, a unit of Union Carzbide and Carbon Corporation. This booklet describes well over 500 money-saving applications of the hard-facing process.

This is the fourth printing since the booklet was originally published a little more than three years ago. Over 35,000 copies have already been distributed. New sections present information concerning special Haynes Stellite J-Metal cutting tools and the corrosion-resistant Hastelloy alloys. A number of examples of hard-facing automotive and aircraft valves and valve seat inserts, and the use of Haynes Stellite trim for high-temperature, high-pressure steam valves, are now also described in detail.

Automatic Belt Tension Control

Harry M. Perry, 737 N. Spring Street, Los Angeles, Calif., has recently published a bulletin describing Automatic Belt Tension Control equipment.

Diesel Generating Set

Fairbanks, Morse & Company, 900 S. Wabash, Chicago, has a new Bulletin 3600-A2 which describes and illustrates the construction and application of Fairbanks-Morse Model 36-A Diesel generating sets.

Swivels

The National Supply Company of Delaware, Toledo, Ohio, recently brought out a new illustrated pamphlet, describing its various types of swivels, used in connection with oil well drilling.

Copies of the new bulletin No. 157 can be secured either from the home office in Toledo, Ohio, or from the various representatives throughout the country.

Pipe Welding

The Linde Air Products Company, 205 East 42nd Street, New York City, recently published an illustrated booklet, discussing the various problems in pipe welding.

Drilling and Fishing Tools

The Acme Fishing Tool Company, Parkersburg, West Virginia, recently issued its enlarged 1938 Catalog No. 12, containing the complete line of drilling and fishing tools for oil and gas field operations. The care and use of tools in the field supplements description and specifications.

Compensated Belts

Manhattan Rubber Manufacturing division of Raybestos-Manahattan, Incorporated, Passaic, New Jersey, has just issued a new illustrated four-page bulletin on Condor compensated belts. The folder explains in detail the advantages of this type of belt and contains engineering data on the proper selection, application and supervision of belts.

Metalspray

Metalspray Company, Incorporated, 113 Llewellyn Street, Los Angeles, California, describes in its recently issued bulletin—800—a variety of new applications in metalspraying, for the benefit of concerns using metal spray guns.

Aluminum

Aluminum Company of America, Pittsburgh, Pennsylvania, recently issued a revised edition of its booklet, "Machining Aluminum," containing detailed data on the machining of aluminum and its alloys.

Wrenches

J. H. Williams & Co., 75 Spring Street, New York City, has just published a new booklet on "How to Select and Use Wrenches." It contains information to guide both the mechanic and tool buyer, giving correct wrench openings for nut and cap screw sizes.

Welding

Linde Air Products Company, Unit of Union Carbide & Carbon Corporation, 205 East 42nd Street, New York, announces the publication of a folder on "Steel Hard-Facing Procedure." The pamphlet presents instructions for applying the hard-facing material to steel wearing surfaces.

Frame Mounted Pumps

Worthington Pump and Machinery Corporation, Harrison, New Jersey, describes in recent bulletins a new line of pressed steel frame mounted ball-bearing centrifugal pumps. Interesting sectional views of these pumps included in the bulletins illustrate the new YU type pressed steel frame.

Oil Testing Instruments

American Instrument Company, Incorporated, 8010 Georgia Avenue, Washington, D. C., recently issued a new catalog on "Oil Testing Instruments," giving information on the latest developments on its instruments for testing petroleum and its derivatives, compounds, asphalt, etc.

Aluminum

Aluminum Company of America, Pittsburgh, Pennsylvania, has released a new booklet entitled "Aluminum Paint Manual" to serve as a guide for selection of aluminum paint for any particular service. It offers directions for mixing and applying the paint.

Pipe Repair

M. B. Skinner Company, South Bend, Indiana, recently published a new "Pipe Repair Handbook," which discusses various kinds of leaks in pipe lines—holes, splits, pitted and corroded sections, etc., and discloses how repairs may be made without service interruption.

Chains

Chain Belt Company, Milwaukee, Wisconsin, recently issued bulletin No. 306, in which the various styles and sizes of Rex chains, designed primarily for use on rotary drilling rigs, are described.

Compressor

The Cooper-Bessemer Corporation, Mt. Vernon, Ohio, has just announced publication of a bulletin describing an improved compressor unit of the horizontal, gas engine-driven type, known as "Type 12."

Brass Shims

Laminated Shim Company, Long Island City, New York, presents in a recently published specifications file folder, essential information on laminated brass shim stock, its composition and degree of lamination, stock size, etc.

Compressors

Sullivan Machinery Company, Michigan City, Indiana, has issued a 24-page catalog entitled "Sullivan Plus Portable Compressors," describing the complete line of two stage portable air compressors. It contains data with reference to applications of air compressors and air tools to construction and maintenance work.

Insulating Material

Johns-Manville, 22 East 40th Street, New York, recently published the new 1937-1938 edition of "Industrial Products Catalog." This well illustrated, 64-page book, contains information and recommendations on high and low temperature insulations. The catalog also describes in detail industrial flooring plank and materials for sound control of mechanical equipment.

Welding

Hobart Brothers, Troy, Ohio, discuss in a recently published, well illustrated book "New Profits in Arc Welding with the New Simplified 40 Volt Hobart Arc Welder."

Batteries

The Electric Storage Battery Company, Allegheny Avenue and 19th Street, Philadelphia, Pennsylvania, has just published a booklet entitled "Electric Starting of Diesels," which outlines the problems of Diesel starting, and describes the methods employed in the Exide research laboratories for collecting data to be used in designing batteries for this kind of work.

Pumping Engines

Le Roi Company, 1706 South 68th Street, Milwaukee, Wisconsin, recently issued bulletin PE-1, which describes in detail the latest design engines for oil well pumping.

Motor Valves

American Schaeffer & Budenberg Instrument Division, subsidiary of Manning, Maxwell & Moore, Inc., Bridgeport, Connecticut, recently announced publication of Bulletin 2700 describing various types of motor valves.

Electric Tools

The Stanley Electric Tool Division, The Stanley Works, New Britain, Connecticut, describes in a recently published 48-page booklet, various types of electric tools. It is well illustrated and contains general data tables.

Casing

Spang, Chalfant & Company, Pittsburgh, in bulletin No. 3 describes its newly developed oil well casing. The booklet gives detailed information covering sizes available.

Chains

The Jeffrey Manufacturing Company, Columbus, Ohio, announces publication of a well illustrated bulletin No. 678, describing its various types of chains for oil well service.

Tractors

Cleveland Tractor Company, Cleveland, Ohio, recently released a bulletin entitled "Around the World with Cletrac Crawler Tractors." This booklet is highly pictorial and shows the tractors in hundreds of operations in every corner of the world.

Steel

Crucible Steel Company of America, 405 Lexington Avenue, New York, recently announced a new edition of its stock book, which shows the various grades, sizes, and tempers of high speed tool and other steels carried by the company's warehouses and distributors.

Trucks, Pulleys and Drives

The American Pulley Company, 4200 Wissahickon Avenue, Philadelphia, recently published several new bulletins dealing with the latest developments in steel hand trucks, pulleys and drives. These bulletins are well illustrated and describe in detail the various products of the company.

USE THIS COUPON
(Address manufacturer direct)

. . . . . .

. . . . . .

Please send me, without obligation, free booklet described in December 6, 1937, issue of THE OIL WEEKLY.

NAME. . . . . .

ADDRESS. . . . . .

WUXTRA - EXTRA - NEWS - HOT NEWS that's the story the MILLER is writing in oil fields throughout the world— removing sand and sediment — increasing production — quickly at small cost.

The MILLER is made in diameters of 2½, 3, 3½, 4, 4¼, 5, 5½, 7 and 9 inches and lengths of 20, 25 and 30 feet. 5/32-inch wall thickness in REGULAR Type, ¼-inch wall tubes HEAVY Type Sand Pumps.

INTERCHANGEABLE BOTTOMS
To Meet Every Condition

● **BAILER BOTTOM**
With the Bailer Bottom installed the MILLER is quickly changed to a Bailer giving you a combination of either Bailer or a Sand Pump in one tool.

● **SAND BOTTOM**
Used when tools are run and when well is shot to quickly remove loose material.

● **STAR BOTTOM**
Used for cutting the sand loose.

● **CHISEL BOTTOM**
(In Pump)
With this bottom tightly packed sand can be easily broken in small pieces so it can be picked up in the pump.

PATENTED
NO. 1370340
NO. 1523604
NO. 1767390
NO. 1862628
NO. 1866228
NO. 2055697

Write for Descriptive Folder and Price List

See Page 1186 COMPOSITE CATALOG

MILLER
Sand Pump Co.

General Offices and Shop, Box 4516
OKLAHOMA CITY, OKLA., U. S. A.

Branch Shops and Offices:
SAPULPA, OKLA. and KILGORE, TEX.

FOR SALE BY SUPPLY STORES EVERYWHERE

Squeaks from the Bull Wheel

Not Cautious

The wife came home with a black eye and a bump on her head. The husband asked what was the matter.

"It's that silly car of yours," she pouted. "I took it out for a spin, and it ran into a telegraph pole."

"My new car is ruined," moaned the husband, "and it's all your fault. You ran into the telegraph pole with your wild way of driving."

His wife stamped her foot angrily.

"That's not true," she protested. "As a matter of fact, just to show how wrong you are, I happened to be powdering my nose at the time."

Doctor's Orders

"My good woman!" exclaimed the amazed expert, "you are stouter than ever! Have you been following the treatment I prescribed? Are you quite sure you ate exactly what I ordered?"

"Everything," replied the patient.

"And nothing else?"

"Nothing whatever," she replied, "except, of course, my regular meals."

Social Security

"You don't mean you are going to marry that lodger after all these years and sell out. What on earth will you live on?"

"Don't you worry. Why the dear man owes me enough to keep us in comfort for years."

Seeing Things

"What is your worst sin?"

"Vanity. I stand for hours in front of my mirror, admiring my beauty."

"That's not vanity—that's imagination."

Smart Aleck

"Do you mean to say that Sandy is famous for his after dinner speaking?"

"I'll say. He always manages to be speaking on the telephone when the waiter brings the check."

Tried It

"Ma, if the baby was to eat tadpoles, would it give him a big bass voice like a frog?"

"Good gracious, no! They'd kill him."

"Well, they didn't."

A Saving Disposition

The usual fisherman sat on the bank of the usual stream, when the usual traveler approached him.

"How're they biting?"

"Very bad. As a matter of fact, there isn't a single fish in this whole stream."

"Then why do you fish here?"

"Because it pays me. Look at the money I save on bait."

An Executive

"So my daughter has consented to become your wife. Have you fixed the day of the wedding?"

"I will leave that to my fiancee."

"Will you have a church or a private wedding?"

"Her mother can decide that."

"What have you to live on?"

"I will leave that entirely to you, sir."

Those Husbands

"Delighted to have met you. Do come over and see us one night."

"So sorry, dear but we never go anywhere. You see, my husband is partially paralyzed."

"Oh, don't let that worry you. My husband is that way more than half his time."

Restaurant Bull

"Waiter, these veal chops don't look so tender to me."

"Sir, I used to be a butcher and I can tell you that less than a month ago these chops were chasing a cow."

"That might be; but not for milk."

Definitions

Boy: A noise with dirt on it.

Jealousy: The friendship one woman has for another.

Home: The place where we are treated best and grumble the most.

Conscience: An inner voice that warns us someone is looking.

Try This One

All that is needed are a few drinks and the most amazing things will result from attempting to master the following:

"A skunk sat on a stump. The skunk thunk the stump stunk and the stump thunk the skunk stunk."

Diplomatic

"Miss de Simpson," said the young secretary of legation, "I have opened negotiations with your father upon the subject of—er—coming to see you oftener with a view ultimately to forming an alliance and he has responded favorably. May I ask if you will ratify the arrangement as a modus vivendi?"

"Mr. Harris," answered the daughter of the eminent diplomat, "don't you think it would have been a more graceful recognition of my administrative entity if you had asked me first?"

Untaught

"The idea! A married man shouldn't be kissing girls the way he does."

"Heavens, no! Any wife should have taught him to kiss better."

Discreet

"I wanna come in."

"No, you tan't tum in."

"Why can't I?"

"Because Mama says boys shouldn't see litta gurls in nitedowns."

Short silence. "You tin tum in now; I took it off."

Impossible

"Why did you divorce your husband?"

"Incompatibility."

"Incompatibility?"

"Yes. He always woke up about two A.M. and wanted to go home."

Truly No Trifle

"What caused the explosion at your house last night?"

"Powder on my coat."

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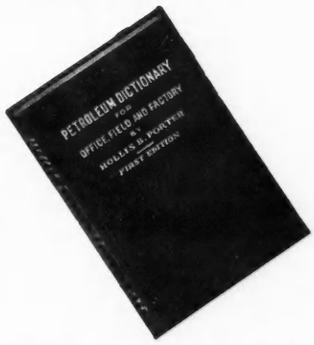

This work grew out of a demand for some source of definition for the terms used by the petroleum industry. It contains over 3,000 definitions of words used constantly by all phases of the petroleum industry. It was published in 1936, and has found its way into engineering departments, legal departments and land departments of producing concerns, as well as to the desks of executives of the petroleum industry.

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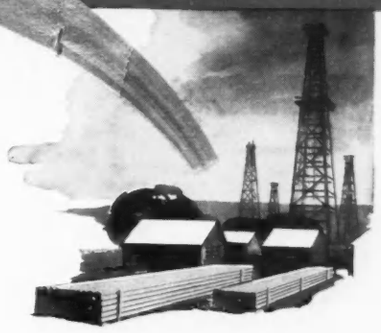

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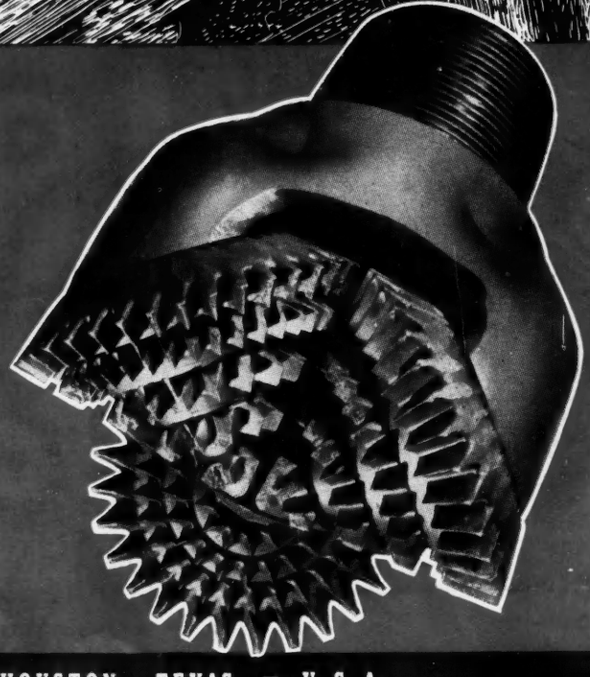

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